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MAY 18TH, 1900

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H. J. Herrick, M. D.,

CLEVELAND, OHIO.

President O. S. M. Society.

TRANSACTIONS

OF THE

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TWENTY-NINTH ANNUAL MEETING

OF THE

Ohio State Medical Society

HELD AT

TOLEDO, JUNE, 16, 17, and 18, 1874.

PIQUA, OHIO:
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1874.

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NOTE.—The superintendence of publication of the present volume of Transactions of the Ohio State Medical Society having been entrusted to me, I desire to return my thanks in behalf of the Committee, to Dr. H. J. Herrick, for yielding to our urgent solicitations so far as to permit us to use his photograph as a frontispiece.

Signed,

S. S. GRAY, M. D.

TWENTY-NINTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD IN

TOLEDO, JUNE 16th, 17th and 18th, 1874.

FIRST DAY.

Morning Session.

The Society met in Toledo, June 16th, and was called to order by Dr. W. T. Ridenour, Chairman of the Executive Committee. The President of the Society, Dr. H. J. Herrick, took the Chair, when Dr. Ridenour, as President of the Lucas County Medical Society, delivered the following

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the Ohio State Medical Society:

It is my pleasant duty, on behalf of the Toledo Medical Association, and of the people of Toledo, to welcome you to our city on this occasion of your 29th annual meeting. We are happy in this privilege of receiving in our midst and welcoming to our hospitalities a body of gentlemen who, as individu-

als, and as an organization, are the pride of the profession of the State.

You have in your Association many members of high character and attainments, who worthily fill places in the front rank of honor and influence among the Physicians and Surgeons of the nation, as teachers, through lectures and the press, and as practitioners of the healing art. While few, comparatively, of your number fill these exalted places, yet no less worthy of honor are the hundreds of quiet men in the Society, who do their work as thoroughly on less conspicuous fields, yet who hold as sacredly the honor, dignity and beneficence of the profession they love, and to which they give their lives.

Your annual meetings have developed an amount of talent and industry on the part of members as exhibited in the published volumes of transactions which show you to have kept fully up with the rapid progress of medical science, and to have added a very creditable amount of original investigations in all of the special branches of medical study. These annual volumes of Transactions contain a wealth of medical literature, much of it original, which would be surprising to any who had not carefully examined them.

We congratulate you, Mr. President, upon the increasing interest taken in your Association by the profession of the State, and the constantly augmenting numbers who attend your Annual Conventions. Your powers for usefulness will be commensurate with your lengthening list of membership. Here in the Northwest your influence has been, perhaps, less felt than in any other part of the State, since you have never previously met within 100 miles of the Maumee. We trust a large addition will be made to your rolls at this meeting. Aside from the stimulus to professional improvement, all must appreciate the social advantages of this annual gathering together of doc-

tors, and the rubbing off by friction, of the rough edges of narrowness and selfishness. We acquire increased respect for each other by becoming better acquainted, and with increased respect goes increased charity. The recreation afforded is also of importance to many, whose arduous daily duties give them little opportunity for relaxation except when they go to attend these Conventions; with some it is the only holiday they allow themselves during the year.

Permit me, Mr. President, to say a word of the Toledo Medical Society, which has the honor of receiving you to-day. We have an active membership of 50, and include nearly all the *non-pathic* physicians of the city. We meet regularly on the second Friday of every month, with occasional special or called meetings, and transact the usual business of local Medical Societies, consisting of reports of cases occurring in practice, and discussions thereon, the result of *post mortems* and the exhibitions of pathological specimens, etc., etc., which are usually interesting, and sometimes important. It must be confessed, the number of original papers read before us might be increased with profit.

We indulge very little in legislation. If we are distinguished for anything, it is for the kindly feeling and good fellowship which prevails among us. We "dwell together in peace and harmony." So true is this that we have been gravely charged with being a "Mutual Admiration Society." We take it as a very high compliment.

Of the City of Toledo, I wish to say a few words. You have doubtless heard of our "great expectations" for the future. So far, our progress has been mainly in material things, and we are unable to show you much of scientific interest, to compete, for example, with the brilliant intellectual entertainments which added so much to the interest and pleasure of your meet-

ing last year at Columbus. We have reason to hope that in the near future our progress in this direction will compare favorably with our general progress.

Toledo has had an unenviable reputation for its insalubrity, and there were no doubt good grounds for this notoriety in the early history of this valley; but that was in the days when all the adjacent country was a wilderness, covered with the densest of forests, when the tuneful batrachian held nightly revels in the swamps and jungles which covered a large part of the space now covered by stately blocks and paved streets. The swamps and jungles have passed away with their tenants—drained by our extensive system of sewerage which is rapidly extending to every suburb—and with them has disappeared our old enemy, the ague. We are now happy to assure you that this reputation for unhealthfulness is no longer deserved. Our tables of mortality, which are accurately kept and reported, show a very low per centage of deaths. For the year ending June 1, 1874, it was 610 from all causes; estimating our population at 45,000, which is certainly within the mark—would give but 13.55 to the 1,000, or 13.55 per cent.

Our experience as physicians proves that the amount of sickness from endemic causes is proportionately small. We are strongly of the opinion that no part of our State can justly lay claim to greater healthfulness than is enjoyed by Toledo. The newly fledged M. D. who comes here expecting that ague will supply him his chief business, and that every other person he meets will be a patient, will soon be undeceived by experience.

Our location, aside from local causes, is one of the most favorable. The proximity of Lake Erie modifies the extremes of temperature, while our position at the southwest end of the Lake secures us, in a large degree, from the raw, cold winds

which come down from the Northern Lakes, and are felt further East in all their severity.

Mr. President and gentlemen, may this be one of your most useful and pleasant meetings. It will be our duty and pleasure to do what we can to make your stay amongst us agreeable to all. Again we bid you hearty welcome to Toledo.

At the conclusion of the address, the Association proceeded to the regular work of the Convention, by the election of Dr. J. W. Hadlock, of Cincinnati, Secretary, *pro tem.*, Dr. Conklin, one of the Secretaries, being absent. The Treasurer, Dr. S. S. Gray, was present and entered on the discharge of his duties.

The Committee on New Members reported, and announced their place of meeting.

Dr. Murphy presented the following preamble and resolutions, which were unanimously adopted:

"WHEREAS, The Constitution of the American Medical Association has been amended, restricting representation in that body to delegates from State Societies, and from Local and District Societies only represented in State Societies; therefore

Resolved, That the committee on Medical Societies be requested to draw up an address to the Societies in the various counties and cities of the State, recommending them to send delegates to this Society, so that they may be represented in the National Association.

Resolved, further, That the Committee also direct the attention of the physicians in counties without an organization, to the importance of forming Societies."

Drs. Langdon, Hadlock, Edwards, Dawson, and Forbes were appointed to fill vacancies in Committees on Publication.

An invitation from the President of the Toledo Board of

Education and the Superintendent of Public Schools to visit their Schools at the High School Building was received and referred to the proper Committee. Also, an invitation to visit the Lenk wine cellars at Tremainsville. Referred to same Committee. Also, invitations to attend a reception at the Boody House this evening, and an excursion to Put-in-Bay to-morrow afternoon, which were accepted.

Several letters were received from New York and Michigan, and were, upon motion, placed on file.

Drs. Jas. F. Noyes, Detroit, Michigan; Chas. T. Southworth, Monroe, Michigan; A. E. Brown, Monroe, Michigan; Dr. Wheelan, of Lenawee county, Michigan, were presented and invited to seats with the Association.

Adjourned until 2 o'clock.

Afternoon Session.

The Association met promptly at 2 P. M. The President called for reports from standing committees. Dr. Hyatt, from the Committee who were instructed to attend the National Association which met at Detroit on the 2d, 3d and 4th of June, gave quite a lengthy resume of Dr. Gross' paper upon a specific disease; also upon the position taken by Dr. Sayer, of Bellevue Hospital, New York City, concerning the shortening of the long bones as a result of fracture.

The Secretary read a letter from Dr. E. B. Stevens, delegate to the New York State Medical Association, expressing great satisfaction concerning his reception, and the workings of that Association.

Dr. D. A. Morse, of London, Ohio, presented a report upon "Monomania," discussing the following questions:

"Is there a *monomania?* Can a man be insane as to one idea or fact, and be *sane* as to all others? Is there an *insanity*

without delusions? (without *delirium?*) Is delusion a *test* of insanity? How are *instinct* and *intellect related?* Is there an *instinctive,* or *reasoning mania?* Can man be *insane* as to *instinct* and remain *sane* in *intellect?* Is knowledge of '*right and wrong,*' a just and sufficient test of responsibility?"

His conclusions were:

1. That there is, in the sense we use the term, a monomania.

2. That there is an instinctive, reasoning or moral mania.

3. That *delusion is a test of insanity to this extent:* that where delusion exists there is insanity, is accepted by all authority; that no responsibility is attached when an act committed is the offspring of delusion, and is in the line of such delusion.

4. That an individual whose delusions defy the evidence of his own senses, whose reason and judgment are incapable of correcting false perceptions, or ideas resulting therefrom; whose impulses having overpowered the will, are guided wholly by instinct, although in all these cases he may be able to distinguish right and wrong, is insane, and to this extent irresponsible.

5. That knowledge of right and wrong is with this class of cases no test of responsibility.

By a unanimous vote, the report was referred to the Committee on Publication, with instructions to publish.

The question of dividing the time by organizing into sections was freely discussed, but it was finally decided not to be in accordance with the constitution and by-laws.

Dr. E. H. Hyatt read a very able paper upon "Alcohol." This was of a supplemental character, and a continuation of his article read last year at the meeting of the Society at Columbus, entitled "Therapeutics of Alcohol."

The paper was accepted by the Society, and a motion "to refer it to the Committee on Publication, with instructions to print," called out a discussion at some length, in which Dr. McLaughlin gave, in a clear and concise manner, the peculiar effects of alcohol. Dr. Hyatt replied, fully sustaining the position he assumed, that alcohol was a sedative and not a stimulant; that the use of the name stimulant in connection with alcohol was a misnomer. The paper was then referred to the Committee for publication, with permission for Dr. Hyatt to revise.

Dr Hyatt offered the following:

Resolved, That members of this Association may resign their membership, who are not under censure or in arrears to the Society by a vote of two-thirds of the members present.

Referred to Committee on Ethics.

Dr. Mussey, from the Committee on Ethics, reported that the committee considered the resolution proposed by Dr. Hyatt unnecessary, as a member of this Society has, in their opinion, the right to withdraw at his pleasure when in good standing, and after he has discharged all his obligations to the Society.

Dr. W. W. Jones read a carefully prepared article on "State Medicine and Public Hygiene," which was referred to Committee on Publication, with instructions to print.

Dr. J. H. Buckner read a paper on "Cerebral Amaurosis and its Connection with Diseases of the Kidneys," which was listened to with marked attention, and at its close called out a discussion, in which Dr. X. C. Scott took exceptions, differing quite materially from the essayist. Dr. B. replied, quoting authorities substantiating the positions he had assumed. Dr. Noyes, of Detroit, was invited to participate in the discussion, and responded in a few remarks, favoring the abandonment of the term "Amaurosis."

Dr. Mussey, from Special Committee on "Electrolysis," made a report of a case of cancer which he treated by electricity very successfully, accomplishing a complete cure. He also gave the result of a long series of observations tending to show that there is every reason to believe that great benefit is derived from the use of electricity in the treatment of tumors, and especially in fibrous tumors of the uterus.

Dr. Hyatt called the attention of the Association to a new publication entitled "Diploteratology," or an account of the celebrated double child that was born in Morrow county in October, 1870; also, of the life, death and autopsy of the Siamese twins, who died in North Carolina, in January last, and of other monstrosities. The work was favorably received by the profession.

NEW MEMBERS.

The following new members added to the Association to-day:

William Graeff, Sandusky City; John M. Adams, Ridgeville, Warren County; J. A. Wilkins, Delta; J. H. Hayne, Nashville; C. A. Lee Reed, Jones Station, Butler County; W. H. Taylor, Cincinnati; W. H. H. Nash, Quaker Bottom; S. H. Bergen, Toledo; Berry Myers, Ashland; M. C. Cuykendall, Bucyrus; E. P. Bartlett, Geneva; Jonathan Priest, Toledo; F. W. Firmin, Findlay; B. S. Culvir, Belpre; W. W. Caldwell, Hamilton; W. S. Patterson, New Lexington; S. Duff Hartman, Tippecanoe City; X. C. Scott, Cleveland; Isaac N. Hines, Cleveland; Thos. Waddell, Toledo; C. Hathaway, Edgerton; Harrison Hathaway, Weaver's Corners, Huron Co.; J. W. Bond, Toledo; L. D. Smith, Lockington, Shelby Co.; Asa Bigelow, Toledo; C. A. Kirkley, Toledo; James L. Chase, Toledo; D. P. Chamberlain, Toledo; G. Fenneberger, Toledo; J. F. Lawless, Toledo; J. G. Nolen, Toledo; H. M. Schnitzler,

Toledo; J. B. Lucky, Elmore; Charles E. Slocum, Defiance; A. J. Brockett, Bristol, Trumbull Co.; W. W. Ellsberry, Georgetown; W. M. Douglass, Toledo; J. S. Reed, Van Wert; D. W. Vale, New Haven; A. J. Murbach, Archibald; F. Hohly, Toledo; E. V. Kendig, Haynesville; John M. Crafts, Sylvania; H. A. Root, Toledo; Jacob Laisy, Cleveland.

The President will deliver his annual address at 11 o'clock, A. M., to-morrow. The public were invited to attend.

The Association then adjourned until 9 o'clock A. M.

THE RECEPTION AT THE BOODY HOUSE.

The reception at the Boody House Parlors was of a quiet, sober and thoroughly social character. The spacious dining room was soon thrown open, and was speedily thronged by the Profession and their families and many distinguished ladies and gentlemen of Toledo.

The Great Western Quadrille Band discoursed some of their choicest airs, and the blending of age and youth in the delicious waltz, or enchanting quadrille, was really pleasing to those who had only seen the disciples of Æsculapius or Galen, in their professional character.

It was refreshing to see the most distinguished members of the Medical Profession of our State, "sink the shop" and show that they were still susceptible of the charms of beauty and of music. Between 11 and 12 o'clock refreshments were served.

The Executive Committee appeared to be ever present to make it all that could be desired, and it was conceded that they were entitled to the next President of the Society. At a late hour the assembly reluctantly dispersed for the duties and pleasures of the next day.

SECOND DAY.

Morning Session.

Pursuant to announcement, the Association assembled at 9 o'clock, and was called to order by the President, Prof. Herrick.

After the reading of the minutes, a resolution was offered by Dr. Hyatt, concerning the passage of additional sanitary laws, viz:

"*Resolved* That in view of the important recommendations of Dr. Jones' paper, 'that a State Board of Health be appointed,' that a committee of five be appointed (and that the author of that paper be one of that committee) to memorialize the General Assembly of this State, in regard to establishing a Bureau of Health, with a Sanitary Superintendent. The following gentlemen were appointed on said Committee: Drs. W. W. Jones, E. H. Hyatt, J. A. Murphy, W. J. Scott, and Jno. Bennett. To report at next meeting.

The resolution was adopted unanimously.

Dr. S. S. Gray, of Piqua, read an article on "Quinine," which showed careful observation and well recorded deductions. It was well received and referred to the Committee on Publication with instructions to print.

Dr. W. W. Seeley, Professor of the Diseases of the Eye and Ear in the Medical College of Ohio, read a very able paper on "Otalogy," which was accepted and referred, with instructions to print.

The President, Dr. Henry F. Herrick, then delivered his annual address, in which he paid a tribute to the physician and profession.

At the close of the President's address, the motion previously lost, to accept the invitation of the Toledo Board of Trade, was reconsidered and the invitation accepted.

After voting certain new members into the Association, the Convention adjourned, to go in a body to the Board of Trade rooms, afterward to meet on board the steamer Gazelle, at 1 o'clock.

THE EXCURSION TO PUT-IN-BAY.

At 1 o'clock the steamer Gazelle left the dock at the foot of Monroe street, well laden with the excursionists, nearly 700 in number. Everybody seemed determined to make the trip all that could be desired. When fairly outside of "Turtle Light," the Association was called to order by the President, and election of officers was conducted with the following result:

President—W. W. Jones, Toledo, 78 votes; C. P. Landon, Westerville, 10; E. H. Hyatt, Delaware, 20. On motion, Dr. Jones was declared unanimously elected.

1*st Vice-President*—C. P. Landon, of Westerville.

2*d Vice-President*—A. C. McLaughlin, of Fremont.

3*d VicePresident*—N. Gay, of Columbus.

4*th Vice President*—E. W. Howard, of Akron.

On motion, the Secretary cast the vote of the Association for the candidates who were declared elected.

Treasurer and Librarian—S. S. Gray, of Piqua.

The ballot for Treasurer and Librarian was likewise cast by the Secretary, and Dr. Gray declared elected.

Secretaries—Tom. O. Edwards, Lancaster, 54; J. W. Hadlock, Cincinnati, 65; E. Jennings, Dayton, 58. On motion of Dr. Edwards, Drs. Hadlock and Jennings were declared unanimously elected.

Committee on Admission—E. J. McCollum, Seneca county;

W. H. Mussey, Cincinnati; J. Harmon, Warren; W. S. Constant, Delaware; W. B. Davis, Cincinnati. The vote was cast by the Secretery in the usual manner.

Dr Mussey offered a resolution of thanks to the Toledo Medical Society, and also to the citizens of Toledo, for the very cordial and royal manner of the reception and entertainment of the State Medical Society, which was carried unanimously.

Prof. J. T. Whittaker, of Cincinnati, read a paper on the "Treatment of Amenorrhœa by Faradization," giving the successful results in a case in his own practice.

C. S. Muscroft, of Cincinnati, read a carefully prepared and illustrated paper upon a case of Osteo Sarcoma of the Superior Maxilla."

On motion of Dr. S. S. Gray, Dr. Jared B. Kirtland was made an honorary member.

J. C. Hubbard, of Ashtabula, presented a resolution regarding the compensation of railroad surgeons, which was made a special topic for consideration to-morrow morning.

Prof. W. S. Scott, of Cleveland called the attention of the Committee on Medical Ethics to the fact that Dr. W. L. Peck, lately of the Central Lunatic Asylum, Columbus, had violated the code of ethics, in the association of himself with the "Sanitarian Institution," of Cincinnati, under homeopathic control.

The Society adjourned till 9 o'clock, A. M., June 18th, to meet in Odd Fellow's Hall.

AT PUT-IN-BAY.

The excursionists reached Put-in-Bay about 4 o'clock P. M., and proceeded to Hunker's, where a fine collation was spread in the yard. After some little time spent in various ways, they re-embarked, going nearly to Middle Bass Island, then steamed towards Toledo. The Great Western Quadrille Band supplied

the music for those who wished to dance. The entire Band accompanied the excursion, and at intervals, performed in their usually excellent manner, selected airs appropriate to the occasion. The steamer Gazelle was found to be a most excellent and suitable vessel; the officers were courteous and obliging; her accommodations are adequate for nearly every occasion that may call for her services.

As the Gazelle came up the Bay, she found the steamer Waite on her return to Toledo from her evening excursion, but moving at a slow rate, as if awaiting the Gazelle. As the latter drew up alongside, it seemed to be understood on both boats that a trial of speed was to be made, and subsequent indications sustained this view. The two appeared to do about as well as they could, and from that point to near the Pennsylvania Railroad bridge, the Gazelle led the way from one to two lengths. At this point the Waite passed and reached the dock in advance. It was stated on board the Gazelle that this was due to the fact she was checked, as a measure of caution, in approaching the drawbridges with which her officers were not familiar.

The result of the trial can hardly be accepted as a definite test of speed.

THIRD AND LAST DAY.

Morning Session.

In accordance with the adjournment on board the steamer Gazelle, the Association met June 18th, and was called to order by the President at 9 o'clock.

Minutes read and approved.

Dr. S. Hubbard offered the following resolution, which was made the special order of the morning, viz:

"WHEREAS, Certain railroad companies in this State have announced their intention to pay for surgical and medical services in 'passes' only; therefore it is

"*Resolved*, By this Society, that acquiescence in such terms is detrimental to the dignity and liberty of medical men, when called as witnesses and experts in courts of justice and on other occasions, and that it is dictatorial and unjust, and that this Society emphatically condemn it."

The resolution was carried.

Dr. Mussey offered the following preamble and resolutions in reference to alcohol as a medicine:

"WHEREAS, The use of intoxicating drinks is an evil of alarming magnitude to the State, to the community, to the family, and to the individual, being the most fruitful source of crime, of improvident living, of domestic unhappiness, and of personal degradation; and

WHEREAS, The use of alcohol as a medicine is often injurious and unnecessary; and

"WHEREAS, It is the obligation and privilege of the good citizen and philanthropist to protect the interests of the body politic, to promote good order, industry and happiness, and to rescue the victims of vice from its influence; therefore,

"*Resolved*, That we will use our influence against the use of intoxicating drinks as beverages.

"*Resolved*, That we deplore the excessive use of alcohol as medicine, and that we will use our influence to limit it to calls of urgency."

After considerable discussion of the preamble aud resolutions *pro* and *con*, they were carried.

A paper by D. J. Snyder, M. D., of Scio, Ohio, upon the "Use of Ergot in Puerperal Convulsions," was "read by its title" and referred to the Committee on Publication, and ordered to be printed.

Dr. Russell, of Mt. Vernon, read a paper on "Inebriate Asylums," which was referred to the Committee on Publication, with instructions to print.

Dr. A. T. Keyt, of Walnut Hills, Cincinnati, read an able paper on "Diseases of the Heart." Referred to the Committe on Publication, with instructions to print.

NEW MEMBERS.

The following new members were announced as received since the first day's enrollment:

J. W. Goodson, Bellevue; J. W. Underhill, Cincinnati; C. E. Tupper, Ottawa County; Wm. Goodlove, Monterey; S. B. Hiner, Lima; H. W. Kitchen, Cleveland; M. Ameck, Cincinnati; J. W. Craig, Mansfield; Philo E. Jones, Wauseon; F. D. Beach, Alton, Franklin County; John M. Corey, Fremont; George L. Hoege, Fostoria; James Coldham, Toledo; E. B. Root, Painsville; R. A. Severance, Bellevue; Joel E. Whiteman, Mt. Hope; A. S. Metzler, Buena Vista; Frank M. Galers, De Graff, Logan County; Wm. Cherry, Toledo; Henry G. Cornwell, Youngtown; W. B. Carson, McComb; G. A. Dean, McComb; J. N. Runyan, West Unity; A. M. Wilbur, West Unity; M. N. Denman, West Unity.

The place of the next annual meeting was determined to be at Put-in-Bay, on the second Tuesday in June.

It was moved that Dr. H. Conant, of Maumee City, who commenced practice in the Maumee Valley, in 1816, be made an honorary member.

Dr. S. S. Scoville, of Lebanon, read a paper on "Diseases of the Spleen." The paper was well received and referred to the Committee on Publication, with orders to print.

Dr. C. E. Slocum, of Defiance, offered a paper, entitled "Cerebral Affections as a Cause of Sudden Death of the Parturient Female," with a case of cerebral hemorrhage, which was read by its title and referred to the Committee on Publication, with orders to print.

The report of the Finance Committee was adopted.

Dr. J. W. Russell, of Mt. Vernon, read a paper on "Urinalysis," showing great research and careful observation. It was referred to the Committee on Publication, with orders to print.

The report of Dr. S. S. Gray, of Piqua, Treasurer and Librarian, was read, received, and referred to the Finance Committee for action.

On motion the Treasurer was allowed ten per cent. of the collection on all delinquent assessments.

On motion, Dr. Mussey, of Cincinnati, was requested to furnish his article on "Electrolysis" in writing, and that when furnished the Committee on Publication print it.

Dr. Hyatt, Chairman of the Committee on Obituaries, asked for and was granted further time for his report, which will be sent to the Committee on Publication when completed, and printed by them.

Dr. S. F. Forbes, of Toledo, read a volunteer paper entitled "A New Amputation Through the Foot," which was referred to the Committee on Publication, with instructions to print. Drs. Murray and Scott spoke in terms of commendation of the operation. The Association was deeply interested, and regarded the operation as being a valuable addition to surgical practice.

Adjourned till 2 o'clock.

The following Committees for the ensuing year were announced, viz:

Executive—A. H. Agard, W. J. Scott, S. S. Thorn, A. Dunlap, H. J. Donahue.

Publication—Tom. O. Edwards, Jr., J. W. Hadlock, E. Jennings, W. W. Dawson, I. H. Clark.

Medical Societies—W. T. Ridenour, John Bennett, W. Carson, A. C. McLaughlin.

Finance—T. G. McEbright, J. G. McCulloch, D. B. Smith, H. N. Hetzler, E. H. Hyatt.

Delegates to American Medical Association—C. P. Landon, Westerville; A. J. Longfellow, W. J. Scott, Cleveland; John M. Corey, Fremont; W. W. Elsberry, Georgetown; George S. Courtright, Lithopolis; E. W. Howard, Thomas McEbright, Akron; W. W. Jones, Toledo; W. H. Mussey, R. Bartholow, Cincinnati; H. J. Herrick, X. S. Scott, Cleveland; E. H. Hyatt, Delaware; Chas. E. Slocum, Defiance; G. C. E. Weber, Cleveland; S. Woodruff, Alton; J. A. Wilkins, Delta; S. F. Forbes, Toledo; J. C. Reeve, Dayton; A. T. Keyt, Walnut Hills, Cincinnati; E. Jennings, Dayton; T. P. Bishop, Delta; S. S. Gray, Piqua; J. F. Gabriel, Piqua; A. C. McLaughlin, Tremont.

Special Committees—W. B. Davis, Medical Examination for Life Insurance; D. A. Morse, Nervous and Mental Diseases; A. McBride, Pessaries; X. C. Scott, Ophthalmology; J. H. Buchner, Astigmatism; W. S. Scott, Nervous Diseases; B. B. Smith, Cataract; J. N. Hines, History of Peripheral Nerve Terminations; G. C. E. Weber, Surgery; H. J. Herrick, Capacity for Repair of Injuries and Diseases of the Human System; J. B. Hough, Nature of the Evidence of Spontaneous Generation; W. T. Ridenour, Relation of Regular Medicine to the Pathies of the Day; G. E. Walton, Mineral Springs of

this and other Countries; Roberts Bartholow, Nervous Diseases; W. J. Conklin, Puerperal Fever; W. W. Dawson, Surgery; T. A. Reding, Obstetrics; Jonathan Morris, Epidemic Malpresentations; A. G. Stevenson, Small-pox; G. S. Stein, Epidemic Diseases; R. Gundry, Puerperal Insanity; D. D. Bramble, Ex-Sectiou of the Hip Joint; N. Gay, Consumption in the Ohio Penitentiary; A. Dunlap, Ovariotomy; T. D. Davis, Muscæ Volitantes; W. Carson, Chronic Diseases of the Lungs.

On motion of Dr. Edwards, a vote of thanks was given to the Odd Fellows, who gratuitously furnished the hall for the meetings of this Society.

A paper from Dr. Holey, on "Trichnosis," was read and referred to the Committee on Publication, and ordered to be printed.

Dr. Slocum read a paper on "Cerebral Hemorrhage," which was referred to the Committee on Publication and ordered printed.

Dr. Scott read a paper consisting of notes of cases he has observed of nervous diseases of railroad employes, for the purpose of hearing criticisms from the Association.

Dr. S. S. Thorn read an article which he had prepared for and read before the Northwestern Ohio Medical Association at their last session, upon a specific disease. He illustrated his remarks and substantiated his prognostications by the introduction of the patient before the Society.

Dr. Morse read a paper on "Insanity," which called out Dr. Scott, of Cleveland, who objected to its publication. It was, however, referred to the Committee on Publication, with instructions to print.

Dr. J. G. Nolen introduced a young lady suffering from deafness, which he considered the result of cerebro-spinal menin-

gitis, and asked for an examination. Drs. Mussey and Smith made a report, but were not satisfied as to the exact condition at the present time, owing to the lack of proper appliances for instituting a critical and thorough examination.

On motion of Dr. Mussey, a committee was appointed to prepare an article upon the use and abuse of alcohol as a remedial agent. The Committee consisted of two gentlemen whose names we could not get, and Dr. J. T. Woods, of Toledo.

The Treasurer and Librarian, Dr. Gray, gave notice that some one had, by mistake, carried away his copy of the Transactions of the Society for 1872, in which he had corrections of the catalogue marked, from data which can not be obtained from any other source. Whoever has it will confer a favor, not only upon him, but also upon the Society, by returning it immediately by express to Dr. S. S. Gray, Piqua, Ohio.

Any person that can give the Post Office address of Drs. C. C. Bryson. E. A. Day and Horace D. Dillon, would confer a favor by communicating with the Treasurer.

The following amendment to the Constitution was offered by Dr. S. S. Gray: That in Article I, Section 1, the word Corresponding be added, so that the last clause shall read "resident, corresponding or honorary members.

Article III, Section 2: corresponding members shall consist of resident members who have removed from the State, or have retired from practice, and shall be entitled to all the privileges of the Society, except voting.

The regular business of the Society being concluded, the Association engaged in desultory discussions of matters personal and professional which incidentally came up.

H. J. HERRICK, *President.*

T. O. EDWARDS, }
J. W. HADLOCK, } *Secretaries.*

ANNUAL ADDRESS

OF THE

RETIRING PRESIDENT,

H. J. HERRICK, M. D., CLEVELAND, O.

ANNUAL ADDRESS

OF THE

RETIRING PRESIDENT,

H. J. HERRICK, M. D., CLEVELAND, O.

Gentlemen of the

Ohio State Medical Society:

I propose at this time to offer some reflections upon the basis of the science of medicine as a science. Early in my professional life I was asked by an intelligent gentleman if we really had any science in medicine, or was it not really a systematized habit of guessing. This impression I am satisfied does not rarely exist. During my practice the question has frequently come to my mind for solution. Now, I ask the question, have we, in any true sense of the term, a definite science of medicine, any established principles relying upon which we may skillfully and safely apply remedies for the relief of diseases? I shall offer some thoughts by which my mind has found a satisfactory answer. I claim that in medicine we have a foundation, based upon scientific principles, as completely established as is any scientific truth. In medicine, the application of these principles or theories is the declaration of a general truth, which all may confirm by observing facts or phenomena. Those theories may not be true; all may not be able by the most honest and patient inquiry to find them confirmed by the fact or phenomena. Hence we have conflicting theories, each having its ardent

advocates. It is often amusing to see with what determined eagerness conflicting theories are sustained. An idea is the only difference. Yet we must remember that ideas govern the universe. Scientific principles depend upon human judgment for the interpretation of fact, as in all other arts. So that all we hope to show is that the practice of medicine has the same relation to the science of medicine that other arts have to different sciences. Here, that I may be understood, I will give a recognized definition of a science, to be knowledge classified, with the enunciation of the theories or principles upon which the classification is based: An art is the application of those theories or principles to practical purposes. Let it be observed that there is no conflict between different *truths*. All truth is a unity, and proceeds from a common source, so there can never be any conflict of theories and ideas, when you perceive them under the clear light of truth. In the history of the world's progress, we see the eagerness with which falsehood has been held on to as truth, and so the mental processes have been warped to conform to false theories. The greatest obstacle to the progress of our inquiries is mental slavery—from which strong minds can not free themselves. Conflict seems to be the spirit of the universe. Nothing remains fixed and unmoved. Even in the physical world no structures can be so fixed as not to be overthrown by the force of conflicting elements. Since the earliest dawn physical forces have been acting and re-acting, moulding and transforming the universe of matter and bringing it to its present perfect condition. No one force, however correlated the forces may be, has acted superiorly to hold and control matter under its influence. Gravitation, magnetism, electricity and chemical affinity may and do act correlatively or conjointly, controlling the conditions of matter. Thus, by the apparent conflict, and yet by mutual

harmony of all the physical forces acting through countless ages, the universe moves on to-day with as much regularity and uniformity as on the morning of creation, when the Almighty fiat fixed the bounds to each of the acting agents. Hence, we say, conflict seems to be the spirit of the universe, yet, when seen in the inexplicable forces of nature, all work out harmonious results. Nor is this apparent antagonism manifest only among physical forces. It holds alike in the ideal world.

Conflicting ideas and theories mark the history of all the sciences. For many of the theories of those who were pioneers in certain fields of thought, their authors were subjected to the dungeon or death. Yet the march of truth has been onward until now advanced positions have been gained over error and so fortified as to be regarded as impregnable among intelligent thinkers. There are certain truths so indubitably fixed that to question them would be an exhibition of folly. I have faith in the triumph of truth however strong and bitter the conflict. I believe too, and expect that until the millenium dawns there will be conflict. There can be none when all walk in the clear light; we shall see as we are seen.

But 'tis not my purpose to wander into abstruse ideas without a present purpose. It is at least to have in conception the fact that there is a region of truth, clear and brilliant, where one may walk and not stumble. It is to hold up to mind the importance of liberality, of inquiry, with reference to new and important theories, especially at this stage of our present knowledge, and at the same time urge a watchful care lest error enter into our teachings and practice. I would have every new dogma held under the scrutinizing care of an unprejudiced judgment before it is accepted and lain away as an unquestioned fact. Hence, I welcome a conflict of ideas and theories in medicine. If those on which I am accustomed to rely cannot stand

the test, let them go the wall. In the conflict of physical forces the universe has never, in the least iota, taken a retrograde movement, but has steadily advanced to a higher condition, adapted to a higher order of development, and a more glorious end. So in the conflict of ideas, truth has never been sacrificed—darkness has never permanently brooded over the field of conflict. If Newton could only stand eagerly gazing upon the great ocean of truth before him, and only gather a few pebbles upon its beach the time will come to the faithful and earnest seeker when the horizon shall be extended, and "darkness shall not brood over the face of the deep to him. This hope may be regarded as somewhat visionary, but the careful observer will now bear record that progress has been made in the different fields of science. Theories have been formed after careful observation of facts which have stood all the tests of opposition. They have been approved by universal acceptance, and various arts have grown out of them, so that they are carried into the practical observations of life.

It now becomes us, at this point of our reflections, to inquire of our field. Have we this clear light afforded by fixed principles, theories unquestionably established upon which we can base practical deductions and applications? No question can be of greater importance to the practitioner of medicine, or of greater moment to the community at large. If we have not the clear light of a completed science, how far have we the guidance of established principles?

Every physical science is founded upon a uniform condition of things or phenomena. It implies in the condition of things or the phenomena the uniform operations of what we call a law of nature, or a principle, whatever that may be. It matters not in this inquiry whether this law of nature resides as a necessity in matter, or whether it be the continued manifestation

of the first great cause of all things—God. Uniformity of phenomena or fact is the essential condition which implies the law.

It has been observed that "if the force, or law, or principle has ceased to operate, we observe and classify things; if it is still in operation we observe and classify phenomena."

In geology, for example, we observe rocks, and read from their surface the phenomena that have taken place ages before producing their present condition; also, in mineralogy. Here we observe and classify the results of an agency which has passed away. But in Astronomy, Magnetism, Electricity and Medicine, we observe phenomena that are now taking place under an agency, now in operation, which agency is acting, and will continue to act, according to its own laws, whether we understand them or not. Newton observed the apple fall from the tree. It was not the apple that he observed specially, but the fact that it fell. This fact, as pertains to all other bodies unsupported, that they tend towards the earth, the influences of the heavenly bodies upon each other, and all similar facts were referred to one and the same principle, and called gravitation.

This law of matter lies at the foundation of the science of astronomy; that which lies at the foundation of chemistry we call the chemical affinity; of electricity, the electric current or fluid; and that which lies at the foundation of medicine we call the principle of life. You may ask, what do we mean by a principle, or law of nature? We mean by a principle, the enunciation of a general truth, or fact, which pertains to all matter under the same circumstances, which principle is set forth in science by theories which have been established by repeated observance of the facts pertaining to it. If the fact be observed, and its relatión to the established theory is recognized, we have the basis of the whole class of facts referable to

the same general cause. A principle or law seems to be an essential condition of all being. We may regard the converse as also true that all being, of whatever nature, has certain conditions of existence. If those conditions are known we can reason with regard to their different parts and processes. Here we observe the importance of having in mind the general truth, as the whole class of facts are referable to a common principle. What that principle is we are not permitted to inquire with any hope of an answer. No conjecture or theory has yet been able to throw a glimmer of light within this dark chasm. It is as silent with regard to its essence or origin as magnetism or electricity. We see everywhere its effects transforming matter into an infinite variety of living forms. Every particle of organized matter before us—the smallest animalcule as well as the largest animal—every plant and tree of the forest are but the exhibition of this ever present, ever acting principle of life. This life principle is the one concerning which we are most interested. If we have a science of medicine upon which the practice is founded, it finds its foundation in the known and fully established normal processes which are constantly and uniformly moved by the power of life. Some have supposed that this power was an essential condition in matter, and that matter has within itself the power, under certain combinations and favoring circumstances, to begin the process of life *de novo*, and develop the endless series of living varieties and species, bringing each into a higher state of development, terminating the series in man as the highest expression of the vital force. This we regard as giving to matter a most wonderful appetency. It is not within the scope of this paper to call attention to what seems to me the various fallacies upon which this course of reasoning is founded, though we must admit that this spontaneous development theory, as it is termed, is accepted by

many able physiologists and able thinkers of the present day. It seems to me to be but the human reason reaching out into the dark unknown, to find within the region of the known the first great cause.

But if we cannot know the essence or the origin of the vital forces, we may examine the phenomena and study the different processes, and from them learn the tendency of all the vital processes in a given being. This then, is the physician's field. It is absolutely essential for the practitioner of medicine who would assist nature in her vital processes and give a restoring hand against disease, that he should know and fully comprehend the normal function of the different organs, lest he be found counteracting rather than assisting. A disordered function is still a vital process, and is always due to some known or unknown disturbing cause.

The different stages of an inflammation would not follow in a dead subject. Even pus is a living being produced by a vital force. A vital process does not produce a dead being; so also a degeneration of tissue is still a condition produced under the action of vital force. Thus we may at least conceive the idea that all diseased conditions are the result of an excess or deficiency of the vital force and find a reasonable verification of the idea in facts. We may, perhaps, properly inquire what are some of the conditions under which this vital force acts, and how it does act?

The first condition is that the matter which is to be brought under its power, be held in solution with particles free to move among themselves. We may hardly appreciate the fact that every particle of our bodies, every atom of organized matter before us, must have been held in solution, and particle after particle been arranged with such precision under the election of vital force. This fact is also one of great prac-

tical moment. Physiology teaches that constant interstitial changes are going on in the different parts of the body from the beginning to the end of life; hence, every particle must be again dissolved before it can be so changed and removed. The more rapid the changes the more active we live. In this sense the paradox is true, the more active we live the more active we die. In this view certain young persons, from their sluggish habits of life, are older in tissue than certain old persons of active habits. Again, another condition of life is that the temperature be raised. The other conditions may all be present, yet if the temperature be low there is no life. A live tree is warmer than a dead one. There is a certain standard of temperature for every individual being. Again, another condition of life is that there is a germ or seed. This is unquestionably true in all the higher order of living beings, and it would only require a very plain course of reasoning by analogy to show that this is also an essential condition for the development of every organized being, however minute. Every organized being is but a combination of organs, each organ or system of organs having a certain function to perform. For example, we have the digestive system, with all the co-operating organs laboring together to provide the necessary nutriment in the right form. Then we have the circulatory system, with the heart and net-work of vessels and capillaries to carry the prepared nutriment to the different parts of the organism. We have also the excretory and secretory system of organs. Also the muscular and nervous system. Thus all the varied and singular wants of the body are provided for by different organs.

We see, we hear, we feel, we walk, we taste, we think, and examine the structure and design of our own bodies, and all through the instrumentality of organs. Yet, if the ever acting power of life ceases, the eye does not see, the ear does not hear,

the sensation is not perceived, gravity asserts her authority and we fall subject to chemical and physical forces.

Thus we have glanced at some of the conditions upon which life acts; it is also a fact that always, and under the same conditions and circumstances she alwsys acts the same. Under the same conditions the same species are formed, and by the same modifying circumstances, the same varieties. Then, too, the same organ performs the same function, and in the same manner if under the same circumstances. It is a self-evident proposition that the vital principle under the same circumstances always acts the same. Here we have uniformity. Here is the foundation for the *science* of medicine. Where there is no uniformity there can be no science. No one doubts to-day that anatomy and Physiology are definite sciences. Pathology is none the less so. We may ask, "what is health?" Manifestly when all the different organs of the body perform their functions perfectly the body is in healthy. If an organ does not perform its function or does not perform it perfectly, there is disease.

To know what health is and what are its conditions is to know what disease is and where is the defect. The history of medicine reveals vagueness and visionary ideas where a knowledge of the laws of this principle of life and the organism would have brought practicable, tangible truth. The old popular idea that disease was a certain personality, invisible, to be sure, but real, preying upon the vitals of its victim, and that death is a grim monster, with a dark, dim outline, standing over the gasping body of its victim, applying his darts from his full quiver, found also a place in the mind of the medical profession. It was somehow supposed that the evil gods had sent a specific, demoniacal disease, and that the good gods had also beneficently provided a specific remedy somewhere in the universe for that

specific malady, and so all diseases could be cured if only that remedy could be found. The skill of the physician was in finding the particular remedy required. Hence the most ingenious perseverance was manifest in bringing together all the known and unknown decoctions which an ignorant and degraded imagination could suggest.

And they have actually been poured down the throat of the patient, gasping for any glimmer of hope of life, from whatever source. 'Tis not strange that new and more humane theories have found their way into the routine practice of to-day. Yet the profession of to-day is clogged and gulled by a whole group of non-meaning and nonsensical terms, which are used in the guise of wisdom. A long catalogue of medicines is enrolled as officinal, whose efficacy in controlling functions, is to say the least, very doubtful. It is time that more definite knowledge of the phenomena of life should prevail, at least in the mind of the profession.

If there is disease, the first question is to know what organ or class of organs, is at fault. Second, to learn the cause of the fault. Third, apply the necessary and proper aid.

Functions are disturbed, medicines control functions and that only. A medicine has no power, as is often supposed, to renew an organ. With regard to this latter duty, the principle difficulty exists. Here it is that empiricism and quackery begin.

Not having answered the first and second questions, symptoms are treated without attempting to reach the cause of those symptoms. Here a class of men spend their energies seeking for the remedy that will relieve symptoms, and they invent a theory expressedby the term "*similia similibus curantur*," which has its foundation and explanation more in the fancies of the mind, than in the facts connected with the vital and other principles. You are aware of the applied interpretation of this the-

ory. For one, I should be glad if such a theory could be proven true, in fact, and no doubt we all would be glad and willing to accept it, if it could bring any evidence entitling it to be called a principle involved in the vital process. The laws of nature are general, and we should suppose would apply to the restoration of all deranged states, physical and spiritual. All lost or disturbed functions should find the law of their restoration in the same principle. We have yet to learn of the theologian who carries this theory into the teachings for the restoration of man's moral nature, though we observe quite often they accept it for impaired physical *health*. It matters not by what particular pathy the disordered function is corrected. It also makes little difference with the action of the medicine upon what particular theory it is administered. The main point of inquiry is: What rational means can I pursue for correcting the disordered function? A variety of agents may be selected which would tend to modify the deranged condition, the judgment must select the best to meet the indications. No one agent can be regarded as a specific, having control over the particular disease.

But you ask: Have we remedies that will control functions, and that can always be relied upon? To this we answer yes, if we understand the modifying circumstances. No one doubts that opium and valerian and belladonna, &c., will modify the functions of the brain and nervous system; that veratria and digitalis will control the heart's action; that calomel and jalap will modify the action of the bowels; that strychnine will increase the action of muscular fibre through the agency of the nervous system. So, indeed, medicinal agents are all classified by their effect upon different organs, as to their therapeutic effect. We must admit that this department of the practice of medicine or the art, is still becoming perfected as all other arts are.

The science of photography may be perfected and established upon undoubted scientific principles, yet the artist does not always get a perfect impression. It depends upon his judgment in preparing the plate for receiving the impression, shading the lights and allowing the proper time. These are all questions of human judgment and are always to be the means of carrying the science into practice or the art. This is true in medicine as in all other sciences which have a practical application in life. The recognized fundamental sciences requisite for an intelligent practice of the art of medicine, are anatomy, physiology, chemistry and botany. But the question arises whether the phenomena of diseased action are so uniform, and so subject to observation, that they can be classified, so as to be accurately defined and recognized by another, to which we must answer, yes. Again, it may be claimed that in all cases, under the *same circumstances*, diseased action in an organ, or combination of organs may always be modified or controlled by the same agent. The success, as well as the difficulty, exists in comprehending the differences involved in the different cases. As there are no two constitutions exactly alike, neither are the external circumstances exactly the same in any two individuals; hence there comes to be a necessity in every case to consider differences in constitution and circumstances.

Here is the great peculiarity of the medical art. The science as considered, based upon the uniform action of the power of life remains, and it is the duty of the art to consider the differences and make the proper allowances, and here is where the great uncertainty in the healing art must rest. The difficulty of knowing all the different conditions, together with the great responsibility involved in acting at all, are the grand peculiarities of our profession. Life, priceless life is at stake, and it often hangs on the decision of the physician. To

act incorrectly upon false impressions may turn the disease to a fatal issue, or not to act at all may be equally perilous and criminal. At the present day it should hardly be regarded a sufficient justification for bad treatment to say we did the best we knew how. It may be that we ought to know better had the opportunities been used. This is criminal ignorance. Many cases not prosecuted at the court of justice yet involve moral guilt. In this light our Medical Colleges have a duty which cannot be avoided. They stand between the ignorant pretender and an innocent public. Having a correct appreciation of the responsible position held by them, they should guard with scrutiny those seeking to enter through them, the medical profession. The scientific basis of our profession and the difficulties in considering the differences in applying the art, render the position of the practitioner not unlike that of the mariner, who is to conduct the ship over the pathless ocean. He is provided with his sounding-line, compass and chronometer, and all necessary appliances, and understands the science of navigation. He knows also, the currents and counter-currents of the ocean of waters below and the ocean of air above, and feels confident of ability to guide her safe with her precious cargo to the desired haven. He succeeds admirably in the open sea when all is smooth and uniform. He can compute his latitude and longitude at any moment and define his position and so regulate the velocity of his ship as to secure the most rapid progress, together with the greatest safety to the cargo. But in the distance there gathers a threatening tempest. Like an avalanche from a towering cliff it threatens all with destruction. By the fierce lightning's glare an iceberg is also seen to be borne with the tempest, which adds terror to the prospect. Ah! now where is your science in the hour of calamity? But see! Understanding the direction of the cur-

rents, the soundings, and the capacity of his ship in the hour of trial, he reefs sail, tacks his ship, and in a moment guided by his unerring compass, or properly allowing for its deflections, he avoids the threatened collision, and steers safely into the open sea, master of the storm and danger. Who would not rather trust his life to such a ship guided by such a commander? Storms may threaten, icebergs may stand in the way, counter currents may oppose progress—the needle even may not point to the pole star, yet he alone is most competent to interpret all these different conditions and meet them.

Thus the faithful ship commander assumes a tremendous responsibility. Yet none the less does he who attempts to guide the frail bark of human life out of a tempest of disease to the open way, to repose and health.

We do not claim for medicine a perfect science, but a true foundation upon scientific principles, under the guidance of which we may hope to walk upon secure ground. Yet, withal, we observe large opportunities for practical skill which cannot be imparted, but acquired by experience. The position and standing of the profession of medicine is a matter of no small interest to the whole community, the State and the United States. It seems also, to follow as a necessary inference that the community should exercise some direction and restraint as to the character and qualifications of those entering it. Ignorant pretenders and empyrics should be screened through a board of examiners appointed by the State, and thus the innocent public protected. I have thus presumed to examine, somewhat, the foundation of our calling, that we may make clear the difference between one who appreciates the relation between the science and art of medicine, and the empiric who follows false principles, or none at all.

It may also be observed, that as yet, our science is not perfected to that extent which would warrant all deliverance from exercising the most charitable liberality in all of our professional intercourse towards the opinion of others.

REPORT

ON

GENERAL PARALYSIS,

BY

D. A. MORSE, M. D.,

LONDON, OHIO,

GENERAL PARALYSIS.

A CRITICAL REVIEW OF THE LITERATURE OF THE SUBJECT; TO WHICH IS APPENDED AN ANALYSIS OF THE CASE OF JOHN S. BLACKBURN, IN WHICH INSANITY WAS ALLEGED AS A MEANS OF DEFENSE.

BY

D. A. MORSE, M. D., LONDON, OHIO.

"*Medical testimony when of any value, can be little else than a reference to authority.*"—Prof. Chas. A. Lee, Notes to Guy's Forensic Medicine.

GENTLEMEN:

The application of Medical Science to serve the ends of Justice, to the interpretation of Criminal Law and Procedure, *i. e.*, to the "tests" of responsibility for crime; and to determine crime itself, requires a special knowledge—a special training—an extended experience in all that pertains to the subjects considered by writers upon Medico-Legal Science.

No one sitting in the quiet of his study, with the multitude of the works upon insanity before him, versed in their contents however well he may be, no one in the whirl and commotion of busy every-day life, as a medical man, however great his experience; no one familiar with the great institutions where the management and treatment of the insane calls for a thorough knowledge of the symptoms, progress, pathology and therapeutics of insanity; no one, to go even further, who may add to all these attainments a theoretical knowledge of Medico-Legal Science, *can fully appreciate*, until he has been called upon to

assume the duties of such position, the *wants* of one who attempts to work up the details, in evidence, analyze the facts, fit and adjust them to a proper conclusion, crystalize them into an "opinion," if you please, in a case where alleged insanity, *although actually existing*, must be shown by a "preponderance of evidence," or "beyond a reasonable doubt," or as sometimes held, "must be clearly shown" to exist, which opinion will extend to and embrace all the ingredients of homicide, relieve from responsibility, and thereby excuse apparent crime.

To any of the aforementioned purposes, or relations of the medical man, aside from the last, the question of responsibility does not arise; the *mental capacity to conduct a rational defense*, to form a deliberate purpose, to commit an act with intent, malice and premeditation, are not questions of fact that one in the situations named will be likely to be called upon to determine; nor will one in the simple capacity of a medical man, with the same degree of mathematical precision, be required to make as thorough analysis, as critical an examination of symptoms, as exact a classification as to the *form* of insanity, as when the life of an individual, the character, reputation and social interests of a family are thereby imperiled.

For all purposes, to the medical man, insanity is a physical disease. He looks upon it as he would any other disease that he may be called upon to treat; he does not shroud it with mysterious obscurities, inquire whether the man is a free moral agent, whether he has will power sufficient to enable him to resist temptation, but regards the mental phenomena only as indices of existing pathological conditions; his brain is not confused with what may be said, *pro* or *con* "*irresistible impulse*," "*insanity without delirium*;" or what Lord Coke, Hale, Blackstone, or any one else may have said or thought of the "tests" of responsibility, civil or criminal; he does not consult authors to

determine whether the action of jalap is modified by the inability of the patient to distinguish by his moral sense, "right from wrong," or to determine how much hydrate of chloral will outweigh an illusion or hallucination, before it produces sleep; but the necessity for therapeutical knowledge, medical skill, a clear diagnosis and rational prognosis, are rested upon the same foundations in pathology, whether mental phenomena are or are not interpreted by a predetermined, despotic legal criterion.

The medical expert, or *skilled witness*, is called upon to hear facts stated by common witnesses, whose expressions are colored by passion, by prejudice, by sympathy, by public opinion, by family relationship and self-interest; or what is much more embarrassing to him, well knowing that seldom are all the facts included, nor can they be as they would be viewed by a medical man unless all the evidence be included, in many cases; the superficial knowledge of the medical witnesses having led to superficial examinations, all the essential facts not being drawn out, yet upon these is he required, a hypothetical case being presented, the expert confined to the case constructed, without the evidence before him, without an examination of the defendant, to explain to a jury facts thus submitted, and is expected to systematize and organize the chaos, however incomprehensible, imperfect, or disjointed the hypothesis.

The expert who has a well digested, well arranged knowledge of the subject, readily forms what *to him* is a satisfactory opinion, and if opportunity has been afforded him to examine the defendant, has his opinion fully confirmed, not only by an observation of conditions stated in evidence, but by seeing in the appearance, expression, demeanor or action of the patient what no witness can describe; yet however firmly he may be convinced of the correctness of his views, however clearly he may express them before the jury, however plausible they may seem to the

counsel upon either side, they may be questioned, and counsel ask that they be confirmed by a reference to authority. The witness is asked to "name some authors who entertain similar views," or if certain authors mentioned are not good authority, the counsel intending afterwards to read from them. The expert declares them good authority, but is mortified when the case is argued to hear read from these very books statements that contradict every view he has expressed. He has declared them to be good authority and in the main they are, but the expert experiences only when too late to remedy it, the fact, that no matter what the view taken, unless qualified in some manner, it can be contradicted, and he thrown into confusion by a reference to the books. *Counsel have no right to read books that have not been submitted under the oath of medical experts as authority*, otherwise why should experts be called, or why should not counsel read conflicting opinions from authors and have the jury to determine what is and what is not authority. The expert is called to declare what is accepted by his profession as *authority*, and when called upon to cite authority should not state as authority that which has been exploded, but the most recent views and developments of the subject. One expert bases an opinion upon those early teachings imbibed when medical science was as yet in its infancy, yet presents it with all the force and weight of more extended modern research. Another who feels the full responsibility and difficulty arising from the position, who feels that he must echo truly authority, is cautious, deliberate, more *reserved*, if not embarrassed; and although he incurs the risk of being considered unqualified, by the ignorant, is more correct, and although he may not *argue the case*, as I have seen frequently done by experts, who evidently were called to make a case rather than tell the truth, he is for science the best champion and in competency and reliability, the best witness. With a clear

knowledge of what authors state he feels the full force of the responsibilities resting upon him, and is the much more reserved as he feels that authorities conflict and the difficulty of showing *what is authority* gradually forces itself upon him. His knowledge has been the steady growth of time, the result of long years of patient study and reflection, of perfect digestion and assimilation of what he has read and observed; and it is as it were by intuition he forms his opinion. He flies from author to author to find that while one confirms his pathology it ignores his classification; that while others approve his classification many others perhaps deny as a special form of insanity that which he has designated, and perhaps others declare it a disease but not insanity at all.

One must experience much of this, if not all, who after having made a thorough examination of John S. Blackburn, attempts to work up the details of evidence, from it alone to gather all the facts, before he has concluded an elaborate opinion that shall exhaust such facts and give them due significance and place in the structure he erects; and he will feel that much is wanting that he would desire expressed.

To my mind no duty a medical man may be called upon to perform equals in degree of responsibility that of the expert, and in no one thing are our medical institutions, in many instances, more remiss than in their failure to teach medical students how to apply their knowledge to practical purposes, and in the manner they ignore this essential branch of a college *curriculum*. No man can be a thorough student of Medical Jurisprudence without receiving new impetus—new motives, a higher sense of duty, a higher appreciation of medicine as a science.

Without further consideration of this at the present time, I desire to end the already too lengthy introduction to this Report

by an extract from one of my lectures, delivered January 3d, 1870, as an introductory to a course in Indiana Medical College, Indianapolis, Indiana, upon Medical Jurisprudence and Insanity, entitled: "THE DUTIES OF THE MEDICAL WITNESS AND HIS PRIVILEGES." After enumerating the objects and end of this Branch, the various duties of the medical witness and his privileges, the lecture concludes as follows:—

"You have, gentlemen, by this time concluded, that the duties devolving upon you as a medical witness are not such that you should ardently desire to perform them; but as sooner or later you will be called upon, if found qualified to fill them, I hope and trust that you will bear in mind their importance, and the fact that without a thorough acquaintance of all the authorities a witness is not fully qualified to give an opinion upon questions involving scientific knowledge. I frequently see men called into court to give evidence in cases of insanity, who never possessed or ever read a single volume upon insanity during all their lives; they could not under any circumstances give you a classification of insanity, yet courts admit their evidence unquestioned. It is a question, whether one half who testify in county courts, could give a list of different works upon medical jurisprudence or insanity, to say nothing of what these works contain. The masses judge the expert by his *presumed* experience. *The counsel select witnesses rather for their influence upon a jury, than the development of truth.* Experience teaches, *but experience alone teaches little that is valuable;* for the mind of man is so constituted that passion and prejudice blind his judgment, and resting alone upon his own observations he is as liable to err as he is to conclude correctly.

"Smith in his Analysis of Medical Evidence, says, 'It is very possible, therefore, that he who depends upon his experience may be inferior, as to his knowledge and experience, to the dili-

gent student; for an accidental observer may be unqualified to make use of his opportunities while the other may acquire much information, without going beyond the labors of others. The man of experience has to labor single-handed, *as much as all the others put together*, ere he can equal them in pretension; while the student again may have opportunities of experience to a minor extent, but will make a vastly better use of a few than the uninformed can of many. *Presumed* experience, for that is certainly what the word in its ordinary use must be restricted to, is in a great measure accidental; it must fall to the share of different individuals in different forms and degrees. I believe that no small portion of that odious discrepancy which has prevailed among medical witnesses whereby the luster of medicine itself has been so much tarnished, is chargeable to the prevalent affectation of being men of *experience* rather than men of *learning*, to the over anxious wish of being extensively employed rather than solidly instructed and properly qualified."

"Prof. Chas. A. Lee, to whom we have so often referred, presents in few words the true feature of the subject. He says, (page 20, notes to Grey): "How often do we see medical men of scanty experience priding themselves upon their experience, and disparaging all knowledge derived from books, and by so doing demonstrate alike their ignorance and want of sense; for what is *individual* experience at the best when compared with all the vast stores accumulated by the sages of the profession of all ages. It is but a drop of water compared with the ocean, a moment of time with eternity. PERSONAL EXPERIENCE UNLESS ENLARGED, IMPROVED AND CORRECTED BY THAT OF OTHERS IS OF LITTLE VALUE. MEDICAL TESTIMONY, WHEN OF ANY VALUE, IS BUT LITTLE ELSE THAN A REFERENCE TO AUTHORITY."

In presenting a review of the Literature of General Paraly-

sis, I am conscious that I have no ordinary task to perform, of my own inability to perform it as justice to writers and to the subject requires. To follow the multitude of writers upon the disease through the expensive and almost inaccessible works containing their views, to seek out these views often under the vague and obscure names with which they have seen fit to designate the disease, concealed many times in works bearing no relation to the disease, and in treatises upon other subjects, as *Heredité, Suicide, &c.*, but few of which works are found in the English language—to bring all these together—express them correctly—and in one continuous article reflect them as it were in a mirror, is a labor from which I shrink; yet when I consider that if well performed no work can be more desirable, will be more acceptable to those versed in the subject, or who have made it a special study, I force myself to proceed, and will endeavor to present in as brief a manner as will be consistent with the faithful performance of this duty, the merits of the Review, the interests of the reader, and a true expression of those authors' views herein represented, *the present Knowledge of General Paralysis.*

Before entering upon a consideration of the various details of symptoms, duration, progress, pathology, &c., I shall briefly notice the views of those writers who described the disease prior to 1826, for this reason: they had no well defined knowledge of the subject, regarded general paralysis as a *complication* of insanity, as something *superadded* or as a *special form of paralysis*, having no connection with the mental phenomena.

The views of these writers are of the highest value and utmost importance, in inducing a thorough consideration of the disease under every possible aspect, in viewing it from many different standpoints; they also attest the fact that although a common condition in public asylums, yet like many other dis-

cases when first noticed by authors, it was but imperfectly described, the accounts of it being crude and very brief; but also, that each succeeding writer carried the study one step in advance of those who preceded him—the present knowledge being a gradual, progressive development of the subject, the first being as the early, faint, glimmering rays of the rising sun which in due season will come forth in full splendor.

HISTORY OF GENERAL PARALYSIS.

Marcé informs us, and also other writers, that the first writer who called attention to general paralysis was Haslam, in 1798. He spoke of the frequency of insanity as a cause of paralytic affections. He remarked that these persons have exalted ideas of pride, that they are incurable, that they fall into imbecility and marasmus, and die suddenly of apoplexy.

Esquirol, in 1805, characterized the affection as an incurable form of insanity *complicated* with paralysis. He uses in different works the same language. In *Des maladies mentales*, T. ii, 46, and *Dict. des sciences medicales*, T. xvi, p. 211, he speaks as follows concerning the relation of paralysis to dementia: "When paralysis complicates dementia all the paralytic symptoms appear in succession; first the articulation of sounds is difficult, soon after locomotion is executed with difficulty, the arms are moved with labor; at length the dejections are involuntary, etc. All these *epiphénoména* ought not to be taken as symptoms of demency, more than the signs of scorbutus which often complicates this disease."

Thus the *dementia* he regards as expressed in the intellectual phenomena, and all physical symptoms as complications, or as he terms them: *epipénoménes*, or additions not essential to the

existence of dementia. This we fully discuss when we consider the nature and pathology of the disease.

Esquirol divides demency into acute, or chronic, simple or complicated, continued, remittent or intermittent. On page 66, vol. ii, *maladies mentales*, he says: "demency may co-exist with lypemania, mania, epilepsy, convulsions, scorbutus, *and above all with paralysis.* Complicated demency is incurable. * * * The complication of mental diseases, with lesions of movement, resists all curative means and leaves no hope of long duration of life. These facts I declare, which we also read in the works of Calmeil, Bayle, Guislain, &c., confirm too well this mournful truth. The first I called attention to this phenomena, 1805, I showed the incurability of insanity complicated with paralysis. *This paralysis is often the sign of a chronic inflammation of the meninges*, and ought not to be confounded with paralysis, consecutive to cerebral hemorrhages, cancers, tubercles, softening of the brain. *It shows itself some times with the first symptoms of delirium*, during the acute period so remarkable at the onset (debut) of almost all forms of insanity. *Sometimes it precedes the delirium, sometimes it comes as a kind of adjunct to it. At first it is partial*, then it invades a great number of muscles and becomes general."

Esquirol seems to have overlooked the fact that the pathological changes induced both the mental and physical phenomena. The study of insanity from a physiological, and anatomico-pathological standpoint, as well as metaphysical, guards against these errors so common with early writers who regarded only mental phenomena in studying insanity, and based their classifications upon the predominant features of these phenomena, leaving pathological conditions and physical symptoms unconsidered, or to be explained on separate principles.

That Esquirol thus erred, no one can, with the light of the

present day, dispute. In a controversy with Dr. Burrows he defines his views so clearly no one need mistake them. He says: "Dr. Burrows appears to believe that I regard the paralysis of the insane as the *effect* and not as the *cause* of the insanity. I said nothing of the kind; I am satisfied to designate the paralysis as a frequent *complication* of insanity, and as rendering more unfavorable the prognosis."

Georget, a pupil of Esquirol, conforms to a considerable extent in his views to those of Esquirol. He does not, however, consider the physical symptoms as complications, but regards the lesion of motion as constituting a *special species of* paralysis, and gives it the name of *paralysie musculaire chronique.*

Georget regards demency and the paralysis as two distinct affections. Esquirol says that paralysis may complicate all forms of insanity; thus we have mania with paralysis, melancholy with paralysis, dementia with paralysis, &c.

We prefer to say that there are two features that may predominate, or characterize the mental phenomena in general paralysis: *exaltation* and *depression*, and that dementia may be the termination or result in either of these. These writers say *dementia* may complicate all forms of insanity. It is for this reason that such endless confusion arises in the literature of insanity: cause, phenomena, effect, pathology, are all confounded, all mingled and commingled until no man can comprehend what is the view of the writer upon any given point; and renders it much more probable that the writer cannot himself.

The obliteration of the mental faculties from whatever cause, constitutes dementia—no matter whether from shock, nervous exhaustion, cerebral disease or other cause. When there has been mental development and loss of the intellectual faculties is consecutive to disease, there is dementia. Idiocy is the *congenital* want of mental capacity; imbecility is the arrest of devel-

opment at some period during infancy or childhood. If these distinctions were preserved there need be no confusion; but when one writer says an aged man has by disease been reduced to imbecility, another to dementia, another to idiocy, what are we to understand by the terms? Simply that he does not comprehend their signification and use.

Dementia is not a real mental state, but the absence of mental power, a negative condition, the lifeless body that remains when mind has expired, "the ashes that remain in the socket when the candle has burned out," "the tomb of the mind," "the last infirmity of noble minds."

Dementia may follow all forms of mental disease, *but complicates nothing*; it exists to such extent and degree as loss of mind is manifest. We might with equal propriety say that in a given case there is *pneumonia complicated with death*, as to say that melancholy or mania is complicated with *dementia*. True, you may say there is *partial dementia*, that dementia begins long before it is fully manifest, that it may never be complete. Is this not true of the body, of physical death?

Georget says: "Demency terminates all forms of insanity which become incurable, provided that the patient lives long enough for this transformation to take place, which almost always is the case. The disorganization which produces this mental state causes at the same time in more than half of the cases, another nervous disease, *muscular paralysis*, either general or partial."

In other words *two diseases* are the result of the same disorganization of structure: loss of *mental* and loss of *physical* power; the intellectual death he calls *dementia*; the physical, *general paralysis*.

He is the first writer who fully described the essential symptoms, and divides the disease, in its progress, into three degrees.

FIRST DEGREE.

"The paralysis commences almost always by declaring itself in the muscles of the tongue; very often it remains confined there a long time before extending elsewhere. The patient shows difficulty of speech, pronounces badly, or slowly the words, stammers more or less; the tongue thrust from the mouth is not drawn more to one side than the other, and seems generally affected. Other phenomena are soon joined to this. If the patient can give an account of his condition, he complains, *may be of one side only*, or of both sides at the same time, of numbness in the extremities, a feeling of pricking, of formication in the hands, the feet and along the tracts of nerves; pains in the head more or less general, sometimes more or less circumscribed, and ordinarily *upon the opposite side from the paralysis*, sometimes nevertheless the same side; movement becomes less easy, slower; the patient ends by being able to serve himself no longer with but the members of one side. All the other functions may be regular, digestion above all very good, fat is not diminished. This first degree may last a long time, *many years*, without the general health appearing to suffer.

SECOND DEGREE.

"The patient is entirely paralyzed upon one half of the body, or both; he can neither walk or hold himself erect. He is forced to confine himself to the bed continually; he can pronounce but few words; intelligence is annihilated. Fat does not yet disappear; digestion is good. The signs which indicate chronic irritation present themselves ordinarily at this period; the pulse shows frequency, hardness; in the afternoon the cheeks color up; there is thirst. This second degree may last some months, a year or more.

THIRD DEGREE.

"This degree comprises all the last months of existence of the patient. It is characterized by increase of the paralysis to such an extent that these patients are but inert masses. They are deprived of color, pale and lean. The appetite is lost, there is either flux or obstinate constipation, and at length death ends the troubles. The intelligence is abolished early; paralytics remain sometimes a year or more without uttering a word, without asking that their wants be satisfied."

Delaye, in 1824, *Considerations sur une espèce de paralysie qui affecte particuliere ment les alienes*, p. 5, added to the name given by Georget, the word *incomplete*, terming the disease, *paralysie general incomplete*. His reasons were that it was but seldom the extremeties were completely paralyzed. He regarded it as a special species of paralysis. He gave also the differential diagnosis between it and other forms of paralysis; and after mentioning some of these differences, says: "Other differences still separate it from these last; thus it affects all the muscles of locomotion. Its invasion is slow, its march always progressive, its termination always bad; at length, the organic alteration which produces it consists in a modification of a particular kind of the cerebral substance. The other forms of paralysis, on the contrary, are ordinarily confined to a part of the body; their invasion is more or less rapid, their progress is sometimes arrested, they retrograde or remain stationary; many recover; at length they depend upon the disorganization or the loss of a part of the cerebral substance. I will add to this that the forms of paralysis which differ the least from the disease in question, those, for example which have for a cause the development of a fungus of the *dura mater*, a

cancer of the brain, &c., have well known signs that characterise them."

Delaye described the form of paralysis considered by him as an affection separate and distinct from insanity; he attempted to show that it was not entirely confined to the insane; he detailed its progress, and gave as a characteristic feature of the mental state, at its appearance, weakness or loss of memory. He regarded it as incurable, and designated as causes, organic changes of the brain, softening, hardening or atrophy, with adherence of the meninges. His table of symptoms comprised only those pertaining to lesion of motion. His chief attention was given to the physical phenomena. Bayle, a writer of the same period, in three different works presented his views of general paralysis: 1822, *Thèse sur l'Arachnitis;* 1825, *Nouvelle doctrine des maladies mentales;* the third, in 1826, *Traité des maladies du cerveau et de ses membranes.* This last appeared the same year Calmiel brought out his work, *De la paralysie considéré chez les aliénés,*

Bayle presented a more correct account of general paralysis than any writer who had preceded him.

He does not, as Esquirol, regard the paralysis a complication, nor as Georget and Delaye a disease separate and distinct from insanity. He did not regard general paralysis as a special paralysis, but as a mental disease; and after the anatomico-pathologic condition, designated it *arachnitis chronique,* in 1822, but later he termed it *monomania ambitieuse avec paralysie.* In his work of 1826, he divides the course of the disease into three periods: 1st Congestion: ambitious monomania with incomplete paralysis; 2d Mania: inflammation of the meninges; 3d *dementy* with general paralysis more marked, due to serious exudation, and a considerably greater weakening of the intellectual faculties, with convulsive movements and epileptiform attacks.

The chronic inflammation of the meninges is the essential anatomico-pathologic character of the disease. He considers the meningitis the cause not only of the paralysis *but of all mental alienation.* Had he confined this to general paralysis the error would not have been so apparent; but no one will accept this last assertion as correct.

We do not agree with these writers upon many points; thus Delaye gives as a differential diagnosis, that other forms of paralysis may be cured, remain stationary or retrograde, we will see that general paralysis frequently when begun is arrested, sometimes for years, the patient apparently having recovered. We do not accept the *monomania des grandeurs* as being the *specific* delirium; of general paralysis, in fact it has no *specific* delirium, we do not regard the paralysis a *complication,* an *epiphenomenon,* or a *special form of paralysis distinct from the mental state.* We regard the disease as a unit with two orders of essential symptoms: Physical and Mental; both dependent upon structural lesion.

Bayle regarded lesion of intelligence and of motion as constituting one disease. He says, p. 40: "The symptoms of *chronic arachnitis* all can be reduced to a general, incomplete paralysis, and a derangement of the intellectual faculties; these two orders of phenomena advance with an equal and proportionate step, and divide the disease into three periods. In the first articulation is sensibly embarrassed, walk unsteady; the disorder of intelligence manifests itself by weakness, a monomaniacal delirium, which to a greater or less extent rules the patient, and often by a state more or less considerable, of exaltation.

"In the second period the motion of the tongue and other members preserve often the same embarrassment as in the first, or become more difficult; the delirium maniacal and general, frequently attended by ruling ideas; there is agitation, from the

loquacity and mobility which causes the patient to continually change place even to furor the most violent and incoercible.

"The third period is in general characterized by a state of demency, an increase of the general and incomplete paralysis: the speech is hesitating and trembling, very difficult and sometimes unintelligible; the step is vacillating, tottering, or even impossible; the excretions are involuntary; the intelligence extremely weak, preserves but a small number of ideas which are completely incoherent, sometimes vague, *sometimes more or less fixed;* the most frequently the patient is calm with from time to time an agitation more or less great. This period terminates itself sometimes by an almost complete paralysis of all voluntatary motion and a state of complete idiocy. Every patient presents not the three distinct periods: it is not rare to see the second wanting, sometimes the second presents a continued or periodic spasmodic agitation; during the third there supervenes often attacks of congestion of the brain, attended with loss of consciousness, and sometimes with convulsive and trembling movements, followed by an increase of symptoms of the disease and sometimes epileptiform attacks.

"This disease appears with a state of ambitious monomania, and an exaltation more or less great, which united to a light paralysis, incomplete and general, characterizes this period. The affected imagine all at once that they are rich, powerful, raised in dignity, covered with distinctions and titles. One believes his fortune doubled, tripled, quadrupled, centupled; another forgets the state of misery in which he found himself at the onset of the insanity, thinking no longer but of imaginary treasures. They make gigantic projects which are to bring them immense sums; they buy all that they see, they are occupied only with acquisitions they ought to make.

Ruled by these ideas they speak of them incessantly and

think of nothing else. Their prattle is inexhaustible; they heat themselves up in speaking and are easily angered by a contradiction of their extravagant ideas. Their face is, in general, red, cheerful, and expresses the satisfaction and joy of their riches and grandeur. They sing, laugh, and are in a remarkable state of hilarity and gayety. They give a reasonable response to questions foreign to the object of their delirium."

Here one form of delirium is described, the *ambitious*, and no mention made of a depressive variety. He sums up his views concerning the lesion of motion: "The general lesion of movement is not a complication, an epiphenomenon nor an accident of demency; there is not with paralytic demency *two* diseases, but two orders of essential symptoms concurring with the same degree to characterise one only and the same morbid entity—*general paralysis*."

The paralysis is general; thought, sensation, and motion, all are involved.

Having now considered to as great length as our space will permit the views of those writers whose works appeared previous to 1826, we are prepared to further consider the disease.

As it is the disease in question we desire to write upon, and not the writers, further than as they furnish us knowledge of the disease, we will consider hereafter each point pertaining to the disease as a separate division of our subject. The authors' views we have presented could not well be brought under these divisions and still give them their respective merits for original observation. They will never cease to be referred to by writers who desire to express a full knowledge of the subject. Without a careful consideration of them we are unable to trace to their origin many theories entertained to-day, and to explain many views that otherwise are incomprehensible.

We shall consider General Paralysis as follows:

I. NAME: What shall we call the disease in question?

II. AGE and SEX: With *whom* and *when* does it appear?

III. IS IT HEREDITARY?

IV. INCUBATION: PRODROMIC PERIOD; perversion of moral faculties.

V. DIAGNOSIS: Course; Duration and Termination; Prognosis.

VI. PATHOLOGY.

I. NAME: What shall we call the disease in question? We prefer to designate the disease GENERAL PARALYSIS. Writers have given names corresponding to their views of the nature, pathology or particular character of the disease, as they have viewed it from a physiological or a psychological standpoint. These names are: GENERAL PARALYSIS; Paralysis of the Insane; folie paralytique; paralytic demency; demency with paralysis; périencéphalite chronique diffuse; méningite; encéphalite diffuse; paralysie progressive; paralysie musculaire chronique; paralysie générale incomplete; méningite chronique avec alienation; meningo-encephalite; GENERAL PARESIS.

General Paralysis expresses with sufficient accuracy the nature of the disease; if we desire to express the predominant features of the mental phenomena, say general paralysis of *expansive*, or of *depressive* form, as one or the other of these states may predominate; expansive or depressive general paralysis; expansive or melancholic general paralysis.

II. AGE AND SEX: With *whom* and *at what age does it occur?* Writers state that general paralysis is observed much more frequently with men than with women. Esquirol says: "insane women are rarely paralytic. The insane men and

women in hot climates, in the South of France and Italy, are rarely paralytic; nevertheless ambitious monomania shows itself at Paris among the insane females; this monomania is not rare in the South of France and Italy among both sexes." Griesinger, *traite des maladies mentales*, 467, says: "All authority agrees that paralytic insanity is infinitely more frequent with men than with women. Calmeil found among 15 insane men 1 paralytic; among 50 insane women, 1 paralytic; Bayle, at Charenton, found paralysis eight times more frequent with men than women."

Foville observed among 334 insane, 31 paralytics, of whom 22 were men, 9 women; Hoffman observed 138 men to 18 women who were paralytics. Of 2700 insane at Leubus, 379 were paralytic men and 82 paralytic women; Duchek observed at Prague 63 men and 6 women; at Stephensfeld, the number given is of men, as one to six of the insane, and one to twenty-six of the insane women.

Marcé *traité des maladies mentales*, 470, says: sex exercises a singular influence upon the production of the disease; while it is very frequent with men it is very rare with women. Of 86 cases of general paralysis noted by Parchappe, 70 were men and 16 women; Calmiel, of 82 cases, 73 were men, 9 women."

All authors do not agree fully with these statements, but declare that when circumstances and conditions under which cases are noted are observed, the difference is less apparent. Baillarger says the relative proportion of men to women is greatly modified when we take the poorer classes into consideration as well as the rich, in France, the number of paralytics being much greater with the poorer classes than with the rich. The statistics from hospitals usually given, are from private institutions, and those where the rich and middle classes alone enter. Griesinger says, general paralysis is nowhere as frequent as

at Paris. Esquirol replied to a similar statement made by Dr. Burrow's as follows: "Dr. Burrows declares there are not as many paralytic insane in England as in France. Burrows attributes the increased number in France to bad management, bad atmosphere, &c. * * * * I know all the importance we ought to attach to hygienic causes in the production of disease * * but I make the remark that in treating of the paralysis of the insane I speak of the paralysis which manifests itself before the admission of the insane into the establishments; * * they have not fallen into this state during their sojourn in these establishments, but they were paralytics before entering there. I am convinced that when they know how better to distinguish the symptoms of paralysis which complicate insanity, they will find in England, and particularly at London, as many paralytic insane as at Paris."

Marc, T. i, 272, says: "There is an accident which in the Northern more often than in the Southern climates, more common with men than women, complicates demency. I wish to speak of paralysis, the development of which is gradual. The articulation of sounds, locomotion, movement of superior extremities, are executed only with more or less difficulty; evacuations become more or less involuntary. These symptoms, which we call general paralysis, the paralysis of the insane, ought not to be considered inherent to demency, not only because that it is not found with the demented always, but because the paralysis is not always in proportion to the intensity of this form of alienation. This epiphenomenon merits always great attention; for it can be overlooked at the onset, yet it plays an important part in the diagnosis of a mental disease."

We have quoted this at length for reason that it is all that Marc says of general paralysis; it contains his views so far as expressed, upon all points.

We see from the above that sex exercises a great influence in determining the relative proportion of the number of the sexes affected. It is not however so much attributed to the *sex* as the character of the occupations of the two sexes; determined by sex and by exposure, excesses &c., even sexual excess having a more exhaustive influence upon the male than the female. It is very interesting to consider fully the operation of *causes* in determining the disease with the two sexes, but we will not further consider it.

AGE. We will briefly consider the influence of age. Calmeil, *traité des maladies inflammatoire du cerveau*, T. I, 270, says: "Age exercises a notable influence upon the rarity or frequency of *perienoéphalite chronique diffuse*. I do not remember that I ever observed this disease before the twenty-second year of life; it has appeared to me still rare at from twenty-three to twenty-six years; it increases rapidly in frequency from twenty-seven to thirty-five, continues to be very common from thirty-five to fifty-five years, and afterward diminishes in frequency to sixty-five years, an epoch of existence, where it is often replaced by interstitial encephalitis of circumscribed limits."

The books abound with tables of cases, occurring at various ages—they confirm or accord with the above statement; it is therefore unnecessary to copy them.

III. IS GENERAL PARALYSIS HEREDITARY? In forming a diagnosis, all other points being settled, this may assume importance. Thus, in the Blackburn case, reported in the Clinic, by Prof. Carson, it is given as an evidence that B.'s disease is not general paralysis, because his disease is hereditary —general paralysis not hereditary.

The voice of authority is that the disease is hereditary; and not the disease as disease, but the tendencies and conditions of nerve organization which induce it, or so predispose that an exciting cause may bring into play these hereditary tendencies.

Calmeil, *maladies inflammatoires du cerveau*, T. I, 272, says: "More than one-fourth of the patients attacked with general paralysis count among their relatives, may be maniacs, may be melancholics, epileptics, perhaps persons affected with perin-cephalitis; hereditary and the primitive conformation of the intra cranial nerve centers, exercise then upon the frequency of incomplete general paralysis an incontestible influence. Sometimes it is the father or mother, an uncle or an aunt, or cousin of those who become affected, who have shown anterior cerebral accidents. Sometimes both lines, paternal and maternal have been affected with cerebral disease. * * *We can boldly declare that one-third of the individuals with whom general paralysis shows itself have had relatives either insane or paralytic.*" Further on he says the erotic temperament furnishes more cases than any other. This propensity is however one of the *prodromes* of general paralysis. Several years before general paralysis is developed there may be seen with individuals excessive sexual desires, with almost uncontrollable impulses. General paralysis follows—we are unable to say whether the condition of the nerve centers determined the excesses, and the excesses the paralysis, or whether one is the prodrome and the other the fully developed disease.

Marcé says: "All forms of insanity, mania, melancholy, and partial delirium engender each other reciprocally and in a distinct manner. General paralysis itself, which by its symptoms, its special anatomic lesions, differs so notably from the pure neuroses of intelligence, finds itself among the ascendants or descendents of the insane with a frequency that proves in a

manner the most peremptory that it is but a branch of the same pathologic family."

Page 469 Marcé says: "Among the predisposing causes hereditary influence plays a grand *role*; and Calmiel is perhaps yet under the true estimate in saying that we encounter it in a third of the cases. Insanity and general paralysis are two branches of the same family, for among the relatives of paralytics we encounter indiscriminately not only paralytics, but maniacs, melancholics or epileptics, who succeed one generation to another transmitting tendencies to the identical root, or condition of disease; it is curious nevertheless to see these dispositions translated in one by simple neuroses, in others by a constant organic lesion of the nervous system."

Dagonet, *traite des maladies mentales*, 438, says: "*Heredite* seems to play an important part in the production of this affliction, and it is not rare to encounter in the relatives of those who are attacked individuals who have been attacked with general paralysis, individuals who have been affected with apoplexy, demency, diverse forms of insanity, epilepsy, &c. This disease is much more frequent with men than women—and rarely shows itself before the age of thirty." Luy's, *Des Maladies Hereditaires*, 66, Art. xii, *general paralysis*: "To speak of the hereditary influence of insanity is to speak in many cases of inherited general paralysis, since the greater part of the time the first phases of this terrible disease are indicated but by delirious conceptions of a special nature." Lucas, *Traite philosophique et Physiologique del' Heredite Naturelle*, Tome ii, 786, says: "But it seems above all to be hereditary in the highest degree (*i. e.* insanity), in demency complicated with paralysis. A notable part of the observations of Bayle, gathered under the name of *meningite chronique*, and where hereditary influence has been proved, present demency both with the ascendants and

descendents." Bayle, pages 83, 87, 115, 250, 300, 556, may be consulted with advantage.

Maudsley reports fifty cases of insanity of various forms, of which he says he labored to determine correctly the cause. Of these fifty cases, *nine* are diagnosed general *paralysis*; of these nine cases *four* are reported by him induced by hereditary influences, *four* by excesses, and of *one* he says "no insanity in the family *but the patient inherited a bad organization.*" In other words about one-half were hereditary.

If we go through the clinical reports of those writers who have given the subject profound attention, who have tried to determine the truth of what they report, we will find, if not so great a per cent. of cases, a large per cent. resulting directly from hereditary influence.

There can then be no question that general paralysis is as much determined by hereditary influence as any other form of insanity, and I am satisfied that authority, and cases reported, which are the best authority, will justify me in saying, that the peculiar character of the mental phenomena, whether of *expansive or depressive* variety, will be as fully influenced by the condition of the nerve centers of antecedents as in any other variety of insanity.

Maudsley says: "General paralysis is a disease which is usually the result of continued excesses of one sort or another; but it may unquestionably occur without any marked excesses, and when it does so there will be mostly discoverable a *hereditary taint* in the individual."

Some writers are silent upon the subject, so far as the hereditary influence of insanity extends in producing general paralysis, but if we examine what they say of demency we will observe they regard it hereditary, *i. e.*, the tendency of demency to be-

come complicated with general paralysis, this being their view of the nature of the disease.

Hence, regarding the disease in all forms, under all considerations, we say *authority declares beyond dispute or controversy, that general paralysis may be inherited*, as the last degree of degeneracy transmitted by insane antecedents.

IV. INCUBATION, OR PRODROMIC PERIOD: *perversion of moral faculties.* The medical man whose acute perceptions enable him to foresee or anticipate general paralysis, when certain conditions are observed with an individual, may frequently avert threatened danger, crime and consequent disgrace, by recognizing early the prodromes of this fearful, incurable malady. And not only this we have stated, but the reputation of a medical man, the honor of the profession and medical science, are degraded by a failure to recognize what is plainly manifest, although it may seem trifling and unimportant, yet which eventually, perhaps too late, declares itself of infinite value as an omen of impending, unavoidable evil; but of which in many instances the serious consequences, by early recognition of the conditions, might have been avoided.

To the educated senses of a well informed medical man the fully developed symptoms of general paralysis are of no more interest, of no greater significance, than those that so unmistakably characterize the prodromic period. The reputation, *fame* we may say, of several eminent French alienists was due to their ability to foresee, and declare the coming storm, that later uprooted mind and vital power.

Maudsley, in his recent work: "*Responsibility in Mental Disease,*" 72-75, illustrates well, as do Winslow and other writers, the necessity of early recognition of mental disease, and the importance of giving full value to prodromic manifestations.

Maudsley says; "There is one striking form of insanity in which mental symptoms of a tolerably uniform character are accompanied by symptoms of gradually increasing paralysis of the muscular system, and which runs a definite course to a fatal termination; it is usual therefore, to make of it a *special class* under the name of *General Paralysis of the Insane.*

"An example will serve best to show how necessary to the formation of a right conclusion is observation *informed by experience.*

A man who has been hitherto temperate in all his habits, prudent and industrious in business, becomes indifferent to his wife, his family, the obligations of his position; his surprised friends see only the effects of vice, and grieve over his sad fall from virtue; after a time they hear that he is in the police court accused of assault, or of stealing money, or jewelry, and are not greatly astonished that his vices have brought him to such a pass. Examined by a competent physician, he is discovered to have a slight peculiarity of articulation and perhaps an irregularity of size of the pupils, symptoms which, in conjunction with the previous history, enable the physician to say with positive certainty that he is struck with a disease which, sapping by degrees his intellect and strength, will within no long time destroy his mental and bodily powers, and finally his life. Our knowledge is so exact that we can do what is the best test of a science—predict with certainty what will happen. The dissipation, speculation, and the theft itself were, as they often are, the first symptoms of general paralysis of the insane. Plainly, common sense without special experience could have small chance of coming to a right conclusion in such a case. The example will furthermore serve to show of what little service a classification by mental symptoms only is, and what little information we get when we are obliged to be content with

such a classification; for in the early stages of the disease it would be necessary to describe them as those of *affective* or *moral* insanity, and finally as those of *dementia*. Thus one patient might, in the course of a short time, run through all the classes of symptoms while suffering from one and the same disease. So plain is this, and so characteristic are the mental and bodily features of general paralysis, that all writers on insanity are agreed in making it an exception to the general rule of classification; they constitute it a class by itself, thus giving the strongest practical condemnation to a purely psychological classification."

In the prodromic period the patient is generally depressed, and melancholy, and even those writers who claim exaltation as the special delirium, expansion, when the disease is fully developed, declare that at this period there is, lasting a longer or shorter period, depression,—which may extend through the whole course of the disease, or briefly end at the onset. Griesinger says: "At the onset of general paralysis the intellectual disturbances present not always the same character. It is rare that we do not observe a melancholic period, which manifests itself sometimes as a simple depression, sometimes by very marked hypochondriasis, very rarely do we see supervene the first lesions of movement during this period of melancholy; nevertheless, as has observed Calmeil p. 328, this does occur, patients still having for some time melancholic delirium, which transforms itself into demency.

During the first period of the disease the character and manner of paralytics are very variable. At the onset the intelligence is generally less active and energetic, the thing the most frivolous afflicts and chagrins them. Among the prodromes we observe also from time to time a perversion of the affective sentiments and character, which manifests itself at times in a

sudden manner with those who enjoy their liberty and are occupied with their affairs, which oftentimes gives birth to medico-legal questions very embarrassing to magistrates: thus we see individuals commit improper acts * * * * are indecent in their behavior."

All will not show the same impulses, the same delusions, or manifest the same conduct. We would expect the passive victim of melancholy to be jovial and active, as the excited ambitious maniac.

Baillarger, *Appendix to Griesinger*, Art. iv, says: "Patients affected with general paralysis show often a long time in advance, several months, a year or more, modifications of character, which without being very marked are not the less important to notice. Some become irritable, passionate, susceptible, and cannot suffer the least contradiction. The relatives note these changes and are astonished at them, but it is very rare at the onset that they regard them as evidence of grave cerebral disease.

I saw recently an insane man who for three months was completely at discord (*brouille*) with his two brothers, as a result of an exaggerated susceptibility, resulting evidently from his disease. At the same time, before his two sisters-in-law, he observed the utmost decorum. No one suspected the change taking place; the delirium which showed itself a little later explained all.

Other patients are a prey to erotic ideas and deliver themselves up to little moral deviations that contrast strangely with their anterior conduct: ordinarily these ideas are not attended with any increase of virile force, but it may be otherwise and then some patients give themselves up to venereal excesses.

When demency is developed, the erotic ideas persist with complete impuissance; patients then talk obscenely and public-

ly commit acts in a manner that renders it necessary that great vigilance be exercised over them.

Propensity to theft is encountered often at the onset of general paralysis when weakness of intellect characterizes this period of the disease. Examples are numerous, and the thefts are of so little importance or so badly done that it should, although it does not always, awaken a suspicion of their state." Lelut reports cases where persons have been condemned for theft and this condition not recognized.

Many patients at this period, show a prolonged state of stupor, very decided and lasting at times many months. They often are inert and remain in a mute condition. This state attended by congestion of the face, with persons of from 30 to 50 years of age, and who have not had previously attacks of melancholy, ought to make us suspect the invasion of general paralysis. If the pupils are unequal and there are delirious conceptions of a melancholic or hypochondriacal nature the presumptions are strong.—*Baillarger.*

Marcé *traité des Maladies Mentales*, 416, says: "Several months before the invasion of general paralysis, we see manifested changes of character, of habits, which singularly astonish us and of which we seek vainly the cause. Sometimes there is an irritability that leads to violence and that is excited by the most trifling cause; sometimes on the contrary, a placidity, an apathy that renders impossible all serious occupation; or a perversion of the moral and affective faculties which prevents the subject from performing his duties; leading to acts of indelicacy, improbity, and of debauchery, that no precedent can make us foresee, and to which *Brierre de Boismont* has justly called the attention of medical men. The families afflicted by these acts attempt to repair the mischief done, the public scandals, but comprehend not the value of these modifications of

the moral state but when the malady has taken a turn more decided, and has entered upon its first period."

The monograph of Brierre, referred to by Marcé, we obtained from Paris, and find it full of satisfactory material confirming the views expressed; it is entitled: *Etudes Medico-legales sur la perversion des facultiés morales et affectives dans la periode prodromique de la Paralysie générale.*

On p. 4 we read: "One of the first and most constant intellectual disorders appreciable is the change of character which consists ordinarily in an irritability extremely great, in movements of impatience, wrath, violence. If the disposition has naturally this tendency, it takes a form more decided which awakes the attention of relatives and friends. This moral perturbation can last six months, one, two or three years, and offer no concomitant symptom.

In other circumstances, the derangement of mind is announced by extravagant conversation: an employee in contact every day, when at his place, with hundreds of persons, is invited to a wedding; all at once he holds the strangest discourse and presents a mobility of ideas nothing can fix—sometimes these are the acts which reveal the disorder of the faculties: a woman, excellent manager, makes purchases beyond her means; despair seizes her, she wishes to put an end to her life; sometime after general paralysis is evident. Several times we have noted the first indices of the evil to be the threats of suicide. The change of character can present clouds very different. Four years before the invasion of the paralysis, a man who had even then shown firmness, became irresolute, uncertain, wept easily, directed nevertheless his affairs for three years, then at the end of this time, he showed a new change of disposition, he became irritable, passionate, *colère,* and paralytic insanity succeeded these two metamorphoses. When apathy succeeds, the affected

cease all their pursuits, yet give with calmness good reasons for their conduct, but it seems impossible for them to do anything. * * * A long time before the appearance of the paralysis, we have noted cases going back six or seven years, we see manifest, with certain individuals, perversions of the moral and affective faculties, which do not hinder them from filling the positions and performing the duties of social life. The surprised, desolated families murmur at the base acts, the indelicate, immoral, the debauchery for which no precedent can prepare them; they excuse the wrongs, pay the damages, stifle complaints, when at last this long and secret martyrdom is terminated by an outburst of the disease."

Brierre made an analysis of 100 cases of general paralysis; on page 16 of the work we have cited, he says: "In the analysis of one hundred cases of general paralysis, we find when we come to the third category, comprising *the disorders of intelligence preceding those of motion*, and which are composed of 42 observations, that one of the first and most constant disorders of the intellect appreciable, is a change of character which consists ordinarily in excessive irritability, impatience, anger, violence. This is observed with three-fourths of the cases. With a more limited number of individuals, the disease is, on the contrary, preceded by a state of calmness, placidity, indolence, apathy. These persons reason well, confess that they ought to labor, do manifest interest in their affairs; but between the word and action there is an abyss they never leap. One of the most ancient cases we have observed of this change is that of a chief gardener of a rich house. During several years he acquitted himself well in his situation, in which, however, it was necessary to follow only a routine. His activity being extreme, he was sufficient. Little by little he became silent; relaxed in vigilance; complained of difficulty in his head; he reasoned

well yet, but declared that rest would be useful to him. He was sent two months to the asylum. During the first he appeared better; the second he conversed lucidly concerning his horticultural labors; he was interesting, and appeared desirous of living to resume his occupations; he still showed signs of improvement. We believed him completely restored, and requested his master to remove him. Sometime after we received information of him; on his return to the country he commented on what ought to be done, *but did nothing;* he was always undecided. It was necessary to send him back.

A second example is that of an architect, also confided to my care. Married to a young wife, who was much attached to him, she perceived at the end of two years that he concealed his plans and appeared no more to be occupied or interested in his pursuits: he would promise to visit, to begin things, to walk, and never left the house. When this was represented to him by his wife he replied he liked nothing better than work, *and continued to do nothing.* This continued one year. He became more irritable, peevish, and absented himself from home. At times he stammered. It was at this time he was placed in my care. He was in the second degree of general paralysis of which the symptoms had existed five or six months. He became more quiet and remained in a state of apathy. At the end of six months his family finding him better took him home. This stationary condition lasted more than a year; then the disease advanced, and he died two years afterwards. In place of the choleric irritability, of reasoning apathy, or with both of these states, there may be manifested graver symptoms; thus we note perversions of the moral and affective faculties. Families are afflicted by these changes without knowing that very often they are the offspring of mortal disease; and, in effect these persons continue to perform well the duties of social

life. * * * This period of general paralysis, the prodromic, may persist many years, as we see with men, who up to this time have been religious, chaste, honest, present the most striking contrasts to their former life. Of these perversions that which has been the most marked is mania for thieving."

These limited propensities, perversions of instinct, treated of generally as forms of monomania, are but the expression of delusions that are deeply rooted in the mind: thus those who are Lord of all the earth, King upon the throne, the Savior of the world, possessed of unbounded wealth, &c., take what their delusion suggests to use for their own purposes; and although at first we are inclined to regard the stealing as an exhibition of natural corruption, if we study well the case and draw out the tendencies of mind we will find that it was in the line of the delusion, or of some delusive idea. These we have mentioned, and the victim of suicide, of melancholy, the homocide are all governed by the ruling delusion, the general tendencies that characterize the disease.

It is of the utmost importance, at times, in these cases to determine whether an act committed was in the line of some delusion or not. Thus the mother commits suicide, kills her children, or takes the life of others; if we study the ruling ideas we will find that she thought herself too wicked to live, or that her children would be safe from the evils of this world, or would starve if not killed, or that God commanded her to make a sacrifice, everything being seen only from the standpoint of delusion and performed in obedience to its stern commands.

Brierre says: "It is then evident that insanity, and general paralysis in particular, can change the character of individuals, and give origin to eccentric, bad, reprehensible acts in entire opposition to their known habits. But here is presented a dif-

ficulty: how can we distinguish between the perversity of passion and disease? It is unfortunately demonstrated by experience that some men who have acquired a reputation without blemish, under the influence of a violent passion, contradict all precedents and commit bad actions; this is a matter pertaining to justice, as a consideration of crime; but it happens oftener that those sudden falls, unforeseen, are the result of mental disease; and, as in this species of disease, there are frequently precursory symptoms, *avant couriers*, as has very well remarked a celebrated English alienist, Dr. Winslow, in his remarkable work: *On Obscure Diseases of the Brain and Mind.* These are premonitory symptoms that it is necessary to seek out and put in evidence. In a great number of cases the task is easy, and the physician appointed promptly points out facts that family affection has overlooked, palliated or explained away. Nothing is more common than to hear the relatives say: 'We have noticed nothing of all this; we attached no importance to it; or we regarded these things as eccentricities; as the result of disappointments; the idea of insanity was far from our minds.' Some say, 'you are dreaming; these peculiarities to which you call our attention have lasted a long time.' Some say, 'we weep at this conduct, we cannot comprehend it, we gave as a cause the age, disease, &c.'

But there are cases that surprise the expert, for which even he is not prepared; it is then necessary for him to redouble his care in his examinations and researches. The indices which ought to guide are at first ideas of disease; in the greater part of cases, in effect where these transformations of character, of humor, of conduct, are marked, it is proper to suspect general paralysis; if the age is from 35 to 45 years, if there has been sexual excesses or intellectual, the presumption will be strong; *if to this hereditary influence is united, the presumption acquires*

more force. But there are some evidences much more certain; these are furnished by disorders of three important functions: the intelligence, motion and sensation. General paralysis may show itself by muscular lesion, it can manifest itself by united alterations of intelligence and motion; it can show itself with trouble of intelligence alone.

Before describing the characteristic symptoms of these different lesions, it is necessary not to lose sight of an *initial* phenomenon, which, without being as universal as attributed by Bayle, is frequently observed, and deserves to be taken into consideration. I wish to speak of *congestion.* In one hundred observations it figures *sixty* times. This accident can consist in a simple deafening, vertigoes, that pass unperceived, but generally recognized, or in congestions with grave consequences and of a special nature. The congestion determines a weakness of the intellectual forces; they become absent minded, lose the memory, hesitate in their judgments and conclusions; attention, comparison, judgment, have no longer their clearness and force or precision, nor have they their ordinary firmness. If we engage the individual to make a *resumé* of something, to present in writing his observations upon a subject in litigation that requires developing, we notice the great difference between this work and those to which he has habitually accustomed himself; by times *the writing itself* is changed. When the disease is more advanced we notice omissions of words, words forgotten, or letters at least. Benevolence is often more marked than is customary; there is a confidence shown in conversation that later characterizes ambitious monomania.. At other times, on the contrary, but more rarely, we observe a state of mournfulness, a tendency to melancholy, to hypochondriasis. Few show the same degree of astonishment natural to men when strangers meddle with their affairs, that should be manifest at the interro-

gation of a physician when the examination is unknown to them.

The disorders of the muscular system are the key notes of the disease, and often reveal the existence of the paralysis. It is these, above all, that we consider the point of departure in the series of degenerations the patient is about to undergo. This sign so characteristic for the specialist, and which but recently was unobserved by expert medical men, manifests itself by a slight trembling of the lips, an embarrassment, scarcely sensible, of the tongue, a hesitation of a letter, of a word, which is supplied sometimes after a long interval. Without doubt this sign alone is not sufficient upon which to declare general paralysis but it weighs heavy in the balance, it directs forcibly the attention, and when it is joined to other well known symptoms, there is no longer doubt. This muscular weakness extends in effect to all the system; the figure has no longer its expression because the muscles which respond to intellectual operations no longer contract, or only with difficulty; standing is no longer perpendicular, movements no longer have their ordinary precision; the pupils become unequal; a certain number of these patients recognize the fact that they are no longer competent to perform their duties, that the sexual functions are in abeyance or abolished; while others, on the contrary, abandon themselves to excesses of all kinds. In order to recognize if this diminution of motility is extensive, we ask the patient to put out the hand and we learn that the pressure is not of a force sufficient to correspond with the appearance. Standing upon one leg announces also lesion of motion.

Sensation can present an appreciable alteration. M. De Crozant has indicated this fact as existing at the onset of general paralysis; many have demonstrated it; we have encountered it in an incipient general paralysis, in consultation with

Ferrus, Baillarger, Brochin and Carriére. Anæsthesia, studied with care in insanity, has been encountered a great number of times; it is common in the second and third degree. Since a long time we have experimented with our cases of paralysis, and in almost all cases we have observed a diminution of cutaneous sensibility, extended at times to its total loss. We ought to assure ourselves of the composition of the urine and of the state of muscular contractility under the influence of electricity. At length, in several of our cases we have seen *amaurosis, partial deafness,* paralysis of the sixth pair preceding many years the development of general paralysis, of which the diagnosis had been extended to that time.

The observations of this work, and the remarks to which they have given place, ought to be by right, concluded as follows:

1. That those individuals who, at an epoch not advanced in life, present a change of character, of conduct, commit acts which are in disaccordance completely with their principles and precedents, ought to create a suspicion that there is an alteration of their intellectual faculties.

2. This probability becomes a certainty when we show with them the greater part or a certain number of the symptoms characteristic of general paralysis, we have enumerated.

3. The doubt which arises at a degree of the disease not far advanced, is dissipated by a prolonged observation, because 95 times out of every 100 general paralysis tends towards continued progress and a termination in death.

4. At length the symptoms described have an importance that is real, for they point out to us, unquestionably, traces of general paralysis when the disease has not yet been declared."

It is unnecessary to add more; a multitude of cases could be reported, illustrating every symptom and phase of the prodromic period, yet they would only lengthen without adding fur-

ther to the subject. The above consideration of the prodromic period, together with what we shall present upon diagnosis, will enable any one to recognize the disease and will convey an idea of all we desire to express upon the subject of diagnosis.

V. DIAGNOSIS; COURSE; DURATION AND TERMINATION; PROGNOSIS. We present the subject of diagnosis as follows:

1. PHYSICAL. 1st the Speech; 2nd Pupils, vision; 3d Muscular action: walk, co-ordination; the paralysis general or partial, complete or incomplete; 4th Sensation; 5th Physical symptoms not always present, less frequently observed than the preceding; 6th Congestions, effusions of blood.

2. *Intellectual phenomena:* Delirium, general or partial. Is there a specific delirium? Two varieties: *Expansive; depressive.*

PHYSICAL PHENOMENA.

1. *Speech, articulation.* Writers mention, with scarce an exception, a change of speech, a difficulty in the articulation of sounds, as one of the earliest manifestations of physical disturbance characterizing the early derangement preceding the development of general paralysis. The speech is said to be *brusque*, a sudden stoppage, stuttering or stammering, or hesitation. It is described also as being like that of a drunken man. The tongue seems thick, unmanageable—co-ordination of muscles so essential to perfect articulation seems impossible. At the same time this difficulty of speech is observed other muscles of the body may be affected, but as the muscular action of the tongue must be more perfect to produce distinct sounds, those may escape notice. This is not always present in the same case with the same degree; it may be observed at one time

and altogether absent at another. Under excitement the trouble is aggravated—articulation acquires its greatest degree of intensity; it then assumes an explosive, or convulsive character. Another feature described by Ronquin is *slowness*. The words or syllables are separated and dragged. Hesitation alone, or even stuttering, is not a symptom of importance with many men, yet when an individual whose articulation has been perfect, whose speech is fluent and easy, shows hesitation, difficult articulation, it should awake suspicions of cerebral disease.

As general paralysis develops itself and the paralysis of muscles is more complete, intelligence also abated, the trouble of articulation increases until at length power to utter articulate, intelligible sounds is lost.

The trouble of speech, at the onset, is due to irregular contraction of the muscles, portions contracting spontaneously, as it were, and portions under the influence of the Will. This fibrillary, or vermicular motion, destroys co-ordination, or renders it impossible. With some it is not manifest when there is agitation, although with others, in general, the contrary is observed. With some it is not apparent until there is fatigue, as after reading or speaking for a considerable time.

Difficult articulation does not always indicate general paralysis, yet when taken in connection with other symptoms, intellectual and physical, it assumes great importance; *it is positive evidence of cerebral disease* and co-existing symptoms will determine its significance.

2. *Pupils, Vision.* The state of the pupils, whether variable, whether contracted alike, as to whether contracted or dilated, has received considerable attention from those investigating and writing upon general paralysis.

In the congestive periods, and in some cases, at other times, both pupils are observed to be unduly contracted, the usual con-

dition, however, is, that where there is alteration of the pupils one is contracted more than the other.

Total blindness, partial, or only slight defect of vision may be observed, with one eye generally more than the other, yet both may be affected.

Baillarger claims that he first pointed out unequal contraction of the pupils as a diagnostic sign of general paralysis; but says: "this may be discovered with persons perfectly healthy in mind, and who never subsequently are attacked with general paralysis. This unequal contraction of the pupils observed, is also observed in simple insanity. We learn that they have had, at a period very remote, some affection of one of the eyes, and that since, the sight is more feeble upon one side. These facts have nothing in common with those connected with the onset of general paralysis, or its course.

Of one hundred cases we will see, for example, one-half or two-thirds who offer for the first time, without having had any previous affection of one eye, this symptom of unequally contracted pupils.

It will certainly come into the minds of many to declare that an individual, because he has unequal pupils, is threatened with general paralysis, but if to this symptom be added other indices, very slight, of another nature (greater activity, change of character, irritability, &c.,) then the inequality of the pupils becomes a sign of sure significance. There is no disease of which the development is preceded by more insidious signs than general paralysis. All signs, however slight, deserve the highest degree of attention during this prodromic period. Inequality of the pupils is one of these signs. I believe we ought always to seek to determine its existence." Griesinger says Seifert found with twenty-five paralytics seventeen cases of which there was inequality of pupils, but says it must not be regarded as a

certain sign, for reason that it sometimes precedes for years outbreaks of insanity in which there is no paralysis."

Moreau, says Griesinger, observed irregular pupils with half of those afflicted with general paralysis; Laséque, in one-third. "Considering the rarity of this symptom with other forms of insanity this proportion is very great. This symptom, when it presents itself, well marked, at the onset of insanity, is one of those which causes us to fear the invasion of general paralysis, more or less immediate. It may then be the first or among the first that excites attention. This was recently observed with a patient thirty years of age who presented no difficulty of speech for two months after the invasion of insanity. Four physicians united in consultation dared not decide whether the disease was a simple insanity or general paralysis, but basing their opinion upon the inequality of the pupils declared that he was *threatened* with general paralysis.

"Inequality of the pupils may have in certain particular cases, a special importance; thus with certain patients attacked with melancholic stupor, immobility, mutism, we are prevented from showing the essential symptoms of general paralysis; and the inequality of the pupils, above all if persistent, excites attention and justifies us in reserving our opinion until the appearance of other symptoms of the disease. It may be observed in cases in which general paralysis is not to be expected, and in other forms of insanity. It appears notwithstanding this, that aside from these cases, inequality of the pupils may make us suspect the invasion of general paralysis." (Griesinger).

Moreau found in 58 cases the right pupil was dilated more than the left 24 times, the left more than the right 34 times. From all sources of information at my command I derive the opinion, that inequality of the pupils as a *specific* sign of general paralysis is overrated by many writers; that it is indicative

of cerebral disease and is observed in many forms of insanity I will not dispute; but that we are able from this sign alone to declare general paralysis, or from its absence to say there is not general paralysis, is more than facts justify.

Nasse, of Prussia, has contributed much valuable information upon this subject. He says: "Observations continued for years in several large asylums, during which time I have given particular attention to the difference of pupils, and the symptoms of partial paralysis accompanying the same, give me a certain claim to speak on this question."

He says: Pelman notes the difference in 25 out of 50 paralytics. Von Linston (Zeitschrift xxiv, p. 440,) has observed in one third of his cases variation of the pupils.

Nasse says: "Of 108 cases of general paralysis which have come under my observation during the last four years, at Siegburg, the ratio was as follows: of 25 female patients one only showed no change of pupil, three others suffered from various diseases of the eye (Glaucoma, dimness of the cornea, Synechia of the iris,) precluding a judgment of the changes in the iris; but the remaining 21 had evident inequality of the pupils. Of 83 paralytic male patients, 76 showed a marked difference of pupils; in two others were noted constant contraction of both pupils to the size of a pin's head. Two suffered from diseases of the eye, viz: contraction of the iris and dimness of the cornea, which did not permit an appreciation of the state of the pupils, whilst in three cases only, no difference of the pupils was observed. Out of 103 cases, therefore, only 4 patients showed no changes."

Austin found only two cases in one hundred, of general paralysis, in which inequality did not exist. Thus while it is noted so constantly by some observers others have found it present in but half of their cases. Why this discrepancy? But

among the insane irregularity of pupils is noted as of frequent occurrence. Amoug 146 insane Castiglioni found only 36 with normal pupils. Nasse says an inspection made during the past year of all the sick, then inmates of the asylum at Siegburg, gave this result, that out of 229 patients only 83 were without this difference of pupils. He says about one fourth and no more of the patients under his observation show no abnormal state of pupil, face, and tongue.

He adds: "This frequent occurrence shows that these irregularities are in no way confined to the forms of general paralysis and dementia; but involve also in a considerable measure the primary forms of mania and melancholy." Nasse says other writers have not observed the inequality of pupils to be as frequent as his observations show it to be.

Marcé says, in doubtful cases inequality of the pupils, as a symptom, is of great importance. This inequality is explained by several writers, especcially Baillarger and Marcé, to be due to the predominance of organic disease in one side of the brain. Nasse says the cause must be sought in the brain itself; Linston affirms the same. Budge attributes it to disturbed nutrition. Marcé says: "In many cases I have proved the inequality to be due not to dilation of one but constriction of the other pupil which remains immovable and strongly contracted, even when placed in darkness. I have observed with some patients both pupils contracted at the same time beyond a normal state."

Dr. Austin attempted to show a connection between the state of the pupils and the nature of the delirium: alterations of the left corresponded to maniacal excitement and ambitious delirium; alteration of the right indicated melancholic delirium; when both were affected equally, the delirium was mixed; when neither pupil was affected there was no delirium. This he confines to general paralysis. Pelman and Nasse, after making ob-

servations to test this, declare it incorrect. Nasse says Austin's reports are not reliable, and makes this remark in connection with the report cited of Austin, in which Austin found the pupil altered in 100 cases with all except 2 cases. Jacobi found the pupil altered in four only out of fifty cases. Notwithstanding this remark of Nasse he agrees with the report of Austin concerning the proportion of cases in which there is alteration of the pupils *which no other writer does.* The fact is singular: with Blackburn, whenever there was a difference in the size of the pupils noted, the right was the largest, coinciding with the views of Austin, Blackburn's delirium being of melancholic form. We do not, however, believe this theory of Austin, or accept it as correct.

Many writers note changes of the eyebrows resulting from paralysis of the muscles. They also note change of vision. Marcé says: "I have seen, five or six times, progressive weakness of sight, extending to complete blindness, some cases of strabismus, some of paralysis of the upper eyelid, before the trouble of speech appeared."

Calmiel says the sight is paralyzed wholly, or in part, in many cases. Many times, he says, the pupil is contracted or enlarged with both eyes, sometimes only with one, sometimes contracted upon one side, dilated upon the other.

Several writers remark, that the pupils may vary much from one month to another, with the same paralytic. (Calmiel, Roussellin, &c.)

The ophthalmoscope has been interrogated upon the conditions of the optic nerve and retina. The reports of observations are too limited to enable us to form any positive, definite opinion.

Henry D. Noyes, (Amer. Jour. Insanity, 412, 1872,) upon this subject, reports eleven observations. He says: "In all

these cases, with the exception of two, there is hyperæmia and infiltration of the nerve, and retina. The striation of the retina, near the nerve, is often extremely pronounced, and may render the edge of the nerve hazy and indistinct. The nerve is often opaque in texture, or may be of a slaty hue. In one instance the nerve is found pallid, and doubt is expressed whether this may not correctly be called a sign of atrophy."

In some cases pathological changes explain the troubles of vision, in others the cause must be referred beyond to the brain.

We may conclude this division of our subject by saying that one-half to two-thirds of those affected with general paralysis show alteration of one or both pupils; this may be either contraction or dilatation; that it is not constant, in all cases, with the same patient, but may be present at one observation and absent at another.

3. Muscular Action: *Co-ordination of muscles; walk; the paralysis, general or partial; complete or incomplete.*

Griesinger has pointed out in the early stages of general paralysis, *spasmodic action*, as a cause of the want of co-ordinating power, instead of paralysis. Falret and Duchenne have also remarked that this inability to co-ordinate muscular action is due rather to imperfect, spasmodic contraction of muscles than a want of power to cause contraction. To produce accurate movements the muscles must contract uniformly, and in unison. This is impossible where a portion of a muscle contracts violently under a slight stimulus, and another portion but slowly. The same is true where one muscle responds readily to the will and another slowly or not at all. This may be illustrated by the tongue; it can be seen to contract unequally, and to contract in small portions spasmodically when protruded, producing the so called fibrillar contraction, or vermicular motion, some

fibers contracting, others not. This must explain many features of muscular action observed in walking, talking, &c.

Griesinger says: "The tongue is the first organ of which there is any inequality. The patient begins to have a little trouble in speaking, he articulates not very well the words, he stutters. The tongue is not for that deviated from a straight line, but when the patient thrusts it from his mouth it trembles a little and sometimes we see convulsive movements. This first symptom, diminution of the volubility of speech, which soon degenerates into stammering, has now an extraordinary importance. When we observe this with one insane we can say with certainty that he is incurable. Very often these patients have all the appearance of health and affirm, in every manner, they never felt better in their lives, yet we see develop with them progressively a series of symptoms that leaves no doubt upon the nature of the affection. At the same time that the speech becomes embarrassed, or more frequently a little after this phenomenon appears, we notice *a change in the walk*, the patient does not raise the legs as is necessary, he walks bad, awkwardly, he wanders unconsciously from his road, the least inequality trips him. Nevertheless he yet walks readily and is able to walk for a long time; there are even some patients who feel impelled to walk constantly, they make long promenades and an experienced person, as long as they walk upon level ground, would notice nothing peculiar in their walk. The arms preserve a long time their force; but in the same measure that articulation of words becomes more and more hesitating and difficult, and as we are obliged to exert ourselves to determine (*se chercher*) what these patients wish to say, the walk becomes reeling as if they were drunk, they drag the feet, the knees appear to desire to flex themselves, they are forced to aid themselves by seeking support from the walls, they stumble at each

footstep and often fall; the arms and hands become stiff and awkward, they seize things convulsively, by times they let them fall; all movements that demand precision (writing, carving, the piano, &c.,) become by degrees impossible. When lying in bed these patients can always move more freely their legs and arms, but these movements are always slower and stiffer than is normal. In proportion as the disease advances muscular power is lost until these patients can no longer hold themselves erect nor speak, they utter only confused sounds that are meaningless; if seated upon a chair they are unable to raise themselves or extend a leg, sometimes the arms enjoy greater liberty of movement.

"The muscular affection seems now to be very extensive, and almost general from the onset, although not well defined; it manifests itself at first in the organs of which the movements have need of great delicateness and precision; the tongue is first affected, and the embarrassment of speech is always a characteristic feature of this form of paralysis. Ordinarily there exists also irregularity, at the same time, in the movements of the lips, the pronunciation of labials is difficult, and even when the patient does not speak we observe slight convulsions about the mouth. In the superior extremities we notice, at the onset, a certain trembling without veritable weakness, tremblings which render the movements irregular, awkward, and uncertain. In the inferior extremities there is often less trembling, at the onset, it is rather an involuntary agitation, rendering the walk jerking and abrupt; the patient cannot regulate properly the movements of the legs; at this period the walk is *brusque*, but later by continued weakening of the muscles he cannot walk at all; we see certain groups of muscles of the legs seized with a stiffness, sometimes but slight at other times persistent for a long time. * * *

"Later there exists in all cases muscular weakness more or

less considerable; the trunk is inclined forward, the arms hang at length by the body, the head at times inclines backwards, the sphincters or muscles which concur to expel the urine and fecal matter are affected, and at length the respiratory muscles are invaded. *Occasionally we see one-half of the body paralyzed more than the other, a deviation of the tongue or one half of the face;* in these cases the lesion appears to have for a cause a more considerable atrophy of one of the hemispheres or a unilateral hæmitoma of the *dura mater.*"

This lengthy quotation shows the progress and development of the muscular paralysis; the relation of the difficulty of articulation to the paralysis, and that all troubles are alike due, where muscular action is the trouble observed, to want of coordinating power, until finally paralysis puts an end to all muscular effort.

MUSCULAR CONTRACTION AS INFLUENCED BY ELECTRICITY.

The influence of electricity upon muscles paralyzed in general paralysis is stated to be the same as in other cerebral palsies; contrary to that which obtains in paralysis of peripheral origin or many spinal paralyses.

Griesinger says of muscular contractility, under the electric stimulus, in general paralysis: "this circumstance is of no great value because this persistence of contractility is observed equally in a multitude of other palsies, as hysteric paralysis, paralysis from cerebral tumors, &c. Duchenne has observed this fact in his *traité de l'electrization localisée,* Paris 1855, and in his *memoire sur l'ataxie locomotrice, Archiv. de med.,* p. 68, 1859."

Dagonet cites also the observations of Duchenne concerning the influence of electricity upon the contractility of muscle. He says: "This learned experimenter has arrived at very

interesting results. He has proved that in paralysis consecutive to lesion of the brain, and particularly in general paralysis with alienation, muscular irritability is preserved. On the contrary, electric excitation will not solicit the contraction of muscles in lead palsy, in those which are consecutive to traumatic lesions of the nerve trunks, or in those symptomatic of of an affection of the spinal marrow. In that disease we have designated: *paralysie générale progressive sans aliénation*, which is not accompanied by any disturbance of intellectual function, and in which no special appreciable lesion of the nervous centers is observed, muscular irritability is especially wanting. In consequence electrization is adapted to distinguish all doubtful cases of general paralysis from those without mental disturbance. NEVERTHELESS, IN GENERAL PARALYSIS MUSCULAR CONTRACTILITY CAN BE REDUCED TO HALF, ONE-THIRD OR ONE-FOURTH OF ITS HABITUAL FORCE; it can also be shown very clearly at an advanced stage of the disease, especially when this has followed a rapid progress."

Marcé says: "General Paralysis resembles no other form; it is not *only* the abolition of muscular contractility that finds itself here displayed, since these patients seated or lying down can move very well their arms and legs, and since in their moments of agitation they discover surprising strength; but it is also in the defect of co-ordination, a want of precision in the movements which is very different from the abolition of the muscular sense or muscular ataxie, but which alone can explain the abolition of the locomotor faculties so complete. The state of the muscles and of their contractility as influenced by electricity deserves mention from this point of view; in effect whatever has been the duration of the paralysis, the muscular masses are relatively little atrophied; they undergo very rarely fatty degeneration, and even to the last moment, even with

patients who remain in bed, preserve intact their electric contractility."

Brierre de Boismont confirms the above. His experiments were in part made with Duchenne.

Dr. Bucknil says; "In the year 1852 we published, in the Report of the Devon County asylum, an account of some experiments we had made in the diagnosis of such cases, by means of the electric stimulus. The electro-galvanic apparatus was applied by us to the lower limbs of patients suffering from mental disease without paralysis, from dementia with ordinary paralysis. The results of our experiments proved, that in dementia without paralysis, and in dementia with ordinary paralysis, there is no loss of excito-motory sensibility, *while in general paralysis there is a great loss of this power.* In some cases the strongest stimulus of the electro-magnetic machine failed to produce any movement of the legs of the patient, beyond a slight tremor, not amounting to muscular contraction, and incapable of moving the limb in the slightest degree. This experiment may be more conveniently, but less effectually, tried by tickling the soles of the feet. In common paralysis it is caused but in general paralysis it is not caused. These experiments establish a pathological rule of much importance in diagnosis, that in paralysis having its seat in the brain, the excito-motory functions of the nerve is not lost; that in general paralysis, the pathological conditions of which involve the whole nervous system, the excito-motory sensibility is almost abolished."

THE PARALYSIS: GENERAL OR PARTIAL; COMPLETE OR INCOMPLETE.

Particular attention should be given to determine these questions, for the character of the paralysis, its extent and completeness throws great light upon the nature of the disease.

Requin, Sauze, &c., say, general paralysis may run its course and terminate fatally without lesion of intellect. We do not believe it. The general voice of authority is that no case runs on to a fatal termination without lesion of the intellectual faculties. There is weakness and unsoundness of mind in all cases that have entered upon the second or third period of the disease, but the mental phenomena enter as constituents of the fact determined by diagnosis, hence physical symptoms alone do not include all the facts upon which an opinion should rest. No two cases present precisely the same degree of advancement in respect to lesion of intellect, sensation and motion. Lesion of intellect may be observed before that of motion; lesion of motion before that of intellect; numbness, tingling, pricking and other lesions of sensation before either of the above. Lesion of sensibility may be very decided. Much of this is depended upon and governed by the point at which the disease begins to manifest itself. Attention will be directed by the competent observer to all three of these: intellect, sensation, and motion; yet not so that one will be studied wholly to the exclusion of facts revealed by observation of the others. When we observe a want of co-ordinating power, and of sensation, without lesion of intellect, we locate the primary trouble in the base of the brain and spinal cord. When the cortical substance is involved intellectual phenomena appear.

Calmiel says: (T. i. 494,) "Microscopic researches tend to prove each day more and more, that diffused, chronic perien-

cephalitis (general paralysis) can propagate itself into a certain number of cases from the intra-cranial nerve centers to the rachidian prolongation: that is, *the march is from above downwards.*

"We have seen it follow a course precisely opposite, in a certain number of cases. There certainly exist cases where the inflammation begins in a chronic form in the spinal marrow, where movement and sensibility, at first, are alone disordered, the moral and mental faculties are afterwards compromised in their turn; and where the functional derangements are the consequence evidently of diffused, chronic periencephalitis: we impress upon you the necessity of noting this observation, *that the inflammation proceeds from below upwards,* and we can take these exceptional facts for the rule."

In other words the phenomena express the seat of the disease, the chief difficulty being in establishing clear pathological views, or determining the nature of pathological changes before death—the same phenomena accompanying changes at different points; yet on the whole the above will serve as rules to guide in forming an opinion.

Baillarger also observes that general paralysis sometimes begins in the cord, or spinal marrow, what has been termed "*muscular sense,*" that is the recognition of muscular conditions, muscular tonicity and contractile power, is a power of the mind. No matter how perfect all organization below the hemispheres, if they are diseased or wanting, there is no executive power. Cut the thread of communication between the brain and spinal cord and muscular power is lost.

The lesion of movement in general paralysis, or paralysis of the muscles, is characterized by its incompleteness. No one muscle seems completely paralyzed until life is nearly extinct. While the muscles seem to retain their size, unlike cases of paralysis following apoplexy, we find there is a gradual, progres-

sive loss of muscular power. While this extensive paralysis implicates great numbers of muscles, at length nearly all in the body, no one seems completely paralyzed, and the loss of muscular power seems so gradual the patient is unable to say positively when it first begun.

All writers, who speak of the subject at all, observe that the paralysis may be developed upon one side of the body, or upon one side more than the other. Baillarger, Calmiel, Dagonet, and others explain this fact by saying that there is greater compression upon one side than the other, and that this compression is due to more excessive congestion upon the side where such compression exists. Baillarger (Ann. Med. Psych. 1858, p 175,) remarks that "*hemiplegies* are observed of a persistent character, always located upon the same side, which depend upon the congestive predominance of one cerebral hemisphere, and which ends by determining an atrophy of the same side, well marked."

"Incomplete hemiplegia appears to be observed more frequently upon the left side of the body; it may change to the other side; it seems to be dependent upon dropsy of the ventricles, or of the arachnoid, the effusion being more abundant upon one side than the other." *Dagonet*, p. 425.

The lesion of motion then, in general paralysis, may be said to be characterized, as a rule, by a gradual, progressive exhaustion of muscular energy and contractile force, beginning with the tongue—showing itself next in the extremities; the muscles of the neck, back, and internal organs are in succession or simultaneously affected; the muscles of involuntary action are last affected; in no case complete until late in the disease, when the patient, an inert, helpless mass, is speedily relieved by death. The very incompleteness of the paralysis excites attention, that although so general there is yet so great muscular activity.

4. *Sensation.* To what extent and at what period of the disease

will disorder of sensation appear? What is its value as a diagnostic sign?

According to Calmiel and Dagonet troubles of sensibility are observed but at the expiration of some time after the disease is manifest—when lesion of movement and intellect have existed for a considerable length of time. According to Baillarger sensibility of the skin is diminished in the last two stages of the disease. Dagonet observes that those affected with general paralysis often manifest loss of sensibility, or a diminution, especially in the extremities of the fingers. "The special senses may be weakened—sight, hearing, smelling may be intact, yet it is common to find signs of partial paralysis, amaurosis, drooping of the upper eyelids, diplopie, deafness, &c.," *Dagonet.*

According to Connolly sexual desires will be extinguished. Dagonet says this is not always correct, that some patients discover a super excitation of the genital organs. He observed a case, he says, in which the disease had advanced to a considerable extent, and yet the individual became a father.

Griesinger says, special sense, as hearing, seeing, &c., may remain intact to the last, yet may be affected. He says: "The sensibility of the skin presents some very remarkable particulars. In almost all cases it appears in the beginning, obtuse, and later almost completely abolished, to such extent that we can pinch them without their exhibiting signs of pain. At times we have observed cases where sligh hyperesthesia of the cutaneous surface was manifest: the lightest contact with the skin provoked extensive reflex movements, convulsions of all voluntary muscles,, a state that offered the greatest analogy to the effects of strychnia."

Crozant says, lesion of sensibillty ought always to be regarded as a precursory symptom of paralysis, which will follow. Baillarger, says, lesion of sensibility should be examined for in

all cases threatened with general paralysis. He says, however, that he has demonstrated the existence of anesthesia where there was no appreciable lesion of motion. One then under his care had ambitious delirium, with signs of demency, hallucinations of hearing, believed the owner of the house in which she lived had given it to her; the intelligence was feeble, the skin completely insensible.

Marcé says, the troubles of sensibility in the early period of the disease are of little importance. He says: "We have spoken of the weakness of sight, we have observed it in some exceptional cases. Besides this Crozant has noticed in his thesis* an almost complete general paralysis; I have had occasion almost complete general paralysis; I have had occasion to verify several times the correctness of this assertion. This anesthesia exists but in a light manner and disappears as soon as the troubles of motility are more decided, and reappears later, in the last period of the disease."

From this we conclude that the pathological changes inducing lesion of motion and intellect also involve the sensorium and organs of special sense. These last being modifications of general sensation, their centers in the base of the brain, with the common seat of sensation, no other result is expected than that all should share in the general ruin and degeneration of nerve structure. It is not expected that constant, identical lesions of sensibility should be manifest more than the same of intellect and motion. In the early stage then we may have predominate lesion of motion with anesthesia; lesion of intellect may predominate; or lesion of sensibility at an extremely early period but soon giving way to predominance of other symptoms; lesion of motion may appear before other symptoms.

* De la paralysie generale chez les aliens, Ann. Med Psychol, 1846, 132.

5. *Physical symptoms of secondary importance,* less constant in their appearance, non-essential to general paralysis.

Grinding of the teeth: This has been noted by observers as a symptom frequently manifest during the course of general paralysis. It is an involuntary, spasmodic action of the muscles, at times annoying to the patient, occurring in spite of his mental efforts to resist it and also during his hours of activity. It is in part due to spinal irritation, in all probability, or will be found more frequent with those having spinal difficulty in addition to cerebral. However it occurs generally during the congestive periods and may be due to meningeal excitement, inflammatory action, and irritation of motory centers consequent upon the congestion—the same irritation inducing the congestion being powerful enough to excite convulsive action. It is not generally observed except when a congestive period has exaggerated muscular activity.

Baillarger says; "We observe frequently this symptom in the course of general paralysis, and in some rare cases, we see it manifested at the onset of the disease. * * One of these patients has had for eight years hemiplegia of the left side, of which there yet remain traces, and he is a prey at times, to a cerebral excitement which forces him to acts of violence. The second patient has had two attacks of facial hemiplegia."

Trembling is another symptom mentioned by writers. It is but the constant twitching of portions of muscle, or the vibratory, fibrillary contraction, or vermicular motion seen in the tongue, manifest elsewhere by *trembling.*

This action with the tongue—it is not always present, is not always of the same intensity when present, may be observed some days and not upon others, may be manifest in the morning and not in the evening; in short it is said to be more apparent when the nervous system is not modified by any ex-

ternal influence. It is but a lesser degree of that state of the muscular system observed in these cases, *Stiffness*, chiefly observed in the melancholic or hypochondriacal varieties of the disease. This may occur at the onset, during the prodromic period, during the course, or only during the terminal period. It is a prolonged *cramp* or rigidity of the muscles.

Continued efforts to swallow, spasmodic action of the muscles of deglutition, constant tasting, have been remarked upon by writers. They are either due to the modification of sensibility, or the same causes operating to induce involuntary muscular action elsewhere, in some cases to both of these causes.

Exaggerated activity. This as a condition the opposite of the apathetic, stupid, semi-comatose state sometimes observed should be regarded as an essential symptom—or as one of great significance; but having no *special* significance, except as indicating the activity of the nerve centers, that is, undue influence upon them of some exciting power, whether local or general disturbance, it is not regarded as an essential symptom. It is but a modification of the condition giving rise to irregular muscular contraction and spasmodic action—an impulse being added to move forwards. Many are unable to keep quiet, but are impelled to keep moving, walking, or are in some state of agitation. It occurs rather in the prodromic period, or at the onset of the disease than at a later period. As a symptom its value consists in its indicating the condition of the nerve centers, and the striking contrast it presents to the apathy, immobility and obtuseness of the depressive varieties. It is however not confined to general paralysis—hence is no specific symptom.

6. *Congestive periods, effusions of blood*, &c.

We come now to one of, if not *the most important* element of the disease: *congestion.* To do it justice we would require as much space as we occupy with the whole consideration of gen-

eral paralysis, yet sufficient may be presented to enable it to be recognized, and its importance in forming a correct opinion as to the nature and results of the condition.

Griesinger comments upon the congestive attacks that usher in, and aggravate the symptoms during the course of the disease, as follows, the full force of which can be appreciated only when considered in connection with the anatomico-pathological conditions observed after death. "We have made a very great number of highly interesting researches upon the state of the brain in general paralysis; they demonstrate that the alteration which determines the disease, is not the same in all cases. Here as in other affections of the nervous system, different anatomic lesions can give rise to the same group of symptoms. Ordinary apoplexy never determines this form of paralysis; on the other hand we often see during the attacks of congestion with loss of knowledge, effusions of blood more or less considerable form in the cavity of the arachnoid, effusions which afterwards encyst, when the quantity of blood is small, being transformed into thin false membranes, as efflorescences upon the internal face of the dura mater, upon the convexities of the hemispheres.

But we cannot admit that the apoplectiform congestive attacks are always the result of a hemorrhage into the arachnoid cavity (*hématome*); there are cases where these attacks occur a great number of times and with considerable intensity, in which there is no hemorrhage. We see sometimes, but this is rare enough, traces of ordinary apoplexy in the brains of those who have succumbed to general paralysis; it is a simple complication; *never*, I repeat it, *does this form of apoplexy determine general paralysis.*"

Marcé, upon the prodromic period says: "It is worthy of interest to remark that general paralysis when it arrives at a

period of complete development may offer uniform symptoms, yet at its onset it may present aspects the most opposite. For example, Jules Falret and Linas have elucidated this point with great clearness, and we admit with them that general paralysis presents at its onset four varieties, with progress very distinct, in two of which physical symptoms predominate, the *congestive* and *paralytic* varieties; and two which are characterized by intellectual troubles, the *expansive* and *melancholic* varieties. The expansive form with ambitious delirium is without doubt the most frequent, but it is not specific as Bayle has thought it to be, and the others ought to be described with much greater care as they have been the origin of the greater part of the controversies which have been raised upon the subject."

Marcé describes the *congestive* variety, his 4th variety, as follows, we omit the first three: "4th *variety*. In the congestive variety the apparent onset of the disease is a cerebral congestion, supervening in the midst of prodromic accidents as yet badly marked. This congestion that we discuss in another place in detail, for it complicates all varieties of general paralysis, presents itself in a comatose form, in a convulsive form, or a hemiplegic form. At first it presents nothing that distinguishes it from ordinary cerebral congestions, but when at the end of some hours or some days, the acute apoplectic symptoms are dissipated, we see them replaced by a maniacal excitement with ambitious ideas; more often yet the congestion seems to give place to a complete return to reason, but the speech remains slightly embarrassed, memory is weakened, intelligence has lost its clearness and vigor. In proportion as we depart from the initial congestion, these symptoms tend, in general, to diminish; we see even the mental faculties return to their normal state, when a new congestion leads to a new aggravation: the disease progresses thus by abrupt periods (*saccades*), for the

amelioration which is produced between two congestions goes always towards attenuating and conducting, little by little, to the second period of the disease. These paralytics have a peculiar physiognomy: with them the capillary network of the face is dilated and varicose, red cheeks, face, neck, ears and scalp injected. The temperature seems not increased of the skin, it is a passive congestion of all the cephalic extremity."

Further on Marcé says, "cerebral congestion plays a *role* of the first order in the progress of general paralysis. It is sometimes the first initial phenomenon; it can also terminate it suddenly by death. At length we encounter it at all periods, as a complication. All congestion, when it spares the life of the patient, leaves after it a notable aggravation of the troubles of motion and intelligence; and upon also another point, congestion determines congestion; in proportion as the number of attacks increase, its frequency, intensity and form, modify the prognosis. There is nothing in the general nature of the encephalic congestions that differs from congestions repeated elsewhere. The cortical substance with its vascular network abnormally developed, with the products of exudation, which alter profoundly its structure, can assimilate itself to these circumstances as well as to cerebral tumors, softenings, cicatrices, about which at irregular intervals congestion takes place, contributing considerably to the organic lesion, and manifesting itself by the habitual phenomena of congestion superadded to the phenomena of the first disease."

Aubanel, *Ann. Med. Psychol, T. vii p.* 189, 1846, gives eight forms of cerebral congestion occurring in general paralysis: 1, *forme légére;* 2, *maniaque;* 3, *convulsive;* 4, *hemiplegique;* 5, *coup de sang;* 6, *comateuse;* 7, *intermittent;* 8, *irréguliére avec alternance de tous les symptomes.*

Marcé presents six forms: 1, light with excitement; 2, mani-

acal; 3, comatose; 4, hemiplegic; 5 convulsive apoplectiform; 6, irregular forms.

"1. The first form, the mildest, consists simply in an abnormal increase of the cerebral circulation. The patient does not fall, remains conscious; but the face becomes red, eyes injected, pulse accelerated, gestures rapid; he becomes loquacious, cannot remain in one place, embarrassment of speech is sensibly augmented. Digestion is laborious, constipation, a temperature a little elevated serves to introduce this condition, of which the duration varies from a few hours to two or three days,* and which generally yields to a purgative or moderate blood letting. It is necessary to remember that these symptoms may be frequently renewed, and constitute less a real congestion than a permanent congestive state which leaves the patient without cessation under the threatenings of the most serious accidents.

"2. The second form differs from the preceding but in the degree of the excitement that the maniacal agitation assumes. Under the influence of the sanguinous afflux, the patient is given up to acts of violence and rage, and the delirious ideas redoubling with incoherence, and intense mental confusion. The redness of the face, and rational symptoms of congestion coincide with that state, which disappears readily under the influence of moderate loss of blood, prolonged baths, and habitual anodynes.

"3. In the comatose form the congestion is announced uniformly by the tendency to somnolency, redness of the face, physical and intellectual inertia. In a few hours this state attains to coma. The patients remain insensible to external agents, respond to no questions, and their muscles are in a state of complete firmness; respiration is as easy as in sleep.

*See Blackburn case at the end of this Report.

The comatose form, pure, is not extremely grave; it is not rare to see it dissipated in a few hours under appropriate treatment.

"4. The hemiplegic form can manifest itself at the onset and then becomes most serious. It is not rare too see paralytics in the midst of a meal, during a walk, let fall all at once an object that they hold in the hand, and cease to be able to stand upon one of the inferior extremities. They remain thus paralyzed of an arm, of a leg, or of one half of the body during some hours or some days, without any grave general symptoms accompanying these partial congestions of one hemisphere. The paralyses thus produced almost always disappear, *but in an incomplete manner*, and leave after them a notable weakness *of one half of the body*.

"5. The apoplectiform convulsive congestion is of all the most grave, and perhaps the most frequent. In this the attack is sudden and really apoplectic. The patient falls as if thunderstruck, unconscious, insensible to all external excitants, and if he succumbs not immediately, is taken with convulsions. These convulsions are sometimes general, sometimes limited, may be to one-half of the body, half of the face, an arm, or leg; they can be purely eclamptic, without well determined character, or clothed with all the appearances of an epileptic attack, *i. e.* convulsive, with the initial shriek alternating with paleness and redness of face, bloody foam, and special convulsions. In two cases they were manifested by separate attacks at intervals of short duration, sometimes several attacks in twenty-four hours, separated by a state of coma more or less complete.

"6. The irregular forms are a mixture of the preceding. The convulsions, comatose state, paralysis, maniacal excitement, succeed without order to constitute a complete state that cannot be described."

These convulsive periods may occur four, five, or six times a

year, ending often in the death of the patient. In 86 observations Parchappe found death result 40 times from this cause.

Calmiel, T. i. p. 501, says of the convulsions: "In other circumstances the contractions of muscular fiber are incessant. In the cases of this species we see sometimes convulsions reproduced for twenty-four, thirty, forty, sixty hours without intermissiou, spasms of the eyelids, muscles of the jaws, lips, arms, hands, hips, the legs are incessantly shaken by a series of shocks more or less violent."

All the forms of congestion mentioned by Marcé may be successively observed with the same person, one attack may be slight, the next convulsive, followed by coma, paralysis more or less complete.

Baillarger, Appendix to Griesinger, p. 633-736, gives an extended consideration of the congestive periods of general paralysis. Calmiel, T. i. p. 510-680 and T. ii, we have the subject fully considered, and will be of interest to all who can read the French.

Baillarger says Bayle deserves the honor of having demonstrated that cerebral congestion is the immediate cause of general paralysis, and adds "this opinion is to-day generally accepted."

Aubanel says cerebral congestions are the cause of all the pathologic alterations which successfully supervene in general paralysis. They determine at first lesions of the meninges and end by altering and softening the gray substance, then the white, if the disease is prolonged.

Parchappe says: "The frequency of cerebral congestion more or less decided at the onset of general paralysis, is to me a fact so well established that often I have been able to foresee the immediate exhibition of paralytic phenomena in some cases where the intellectual trouble, still free from all paralytic com-

plication, or sometimes but very slight has been preceded by or accompanied by cerebral congestion.

Falret makes a distinct form—the *congestive* variety—of general paralysis, reducing the disease to *three* varieties: 1. congestive; 2. paralytic; 3. mental variety. Dagonet adopts this division of the characters of the disease and treats first of the congestive variety:

"1. *Congestive variety.* All authors have noted the frequency of congestions, more or less defined, in the prodromic period of general paralysis; they show themselves under the form of shocks, loss of consciousness more or less complete, sometimes epileptiform attacks. These congestions are accompanied with or followed by various paralytic phenomena, ordinarily temporary; an embarrassment of speech, often intense after the attack, but which becomes afterwards less perceptible, a weakness of intellect, or, even in some cases, delirium, either of a quiet or of an agitated character."

General paralysis may be ushered in with an attack, or series of attacks, of congestion; after each period of congestion the paralytic as well as intellectual symptoms are aggravated. Some cases seem to advance in no other way. These congestive attacks may vary in intensity from a slight afflux of blood to full unconsciousness, resulting in death. They seem to bear the same relation to inflammation that congestion does elsewhere. The vegetative system of nerves—sympathetic—the vaso-motor, undergo profound radical change of character, either from exhaustion or depression as may be seen in these congestions. With the melancholic, except during these congestions, there is paleness. The turgescence resembles that produced by a section of the sympathetic in many cases. The continued congestion as shown by the redness of the face, can not result otherwise than in organic lesion. Nutrition must be greatly modi-

fied, and this is attested by *post mortem* examination, when the changes brought about are observed, as we shall see. The softened blood vessels, relaxed and crowded, give way, and effusions of blood follow, in the brain, eyelids, ears,* &c. The external appearances, congestion of face, ears and scalp, are of the highest significance in general paralysis, indicating the condition of circulation within. If with great restlessness there be excessive congestion of the external surface of the head, we would expect the same condition to exist *within* the cranium. Hence, declarations that they are of no value as signs, or that the condition indicates *nothing*, only expresses the superficial knowledge of the observer. Continental writers speak of this highly congested state, followed by local effusion of blood, as an erysipelatous condition—some call it erysipelas.

Griessinger, 505, *Traité des Maladies Mentales*, says: "One of the most frequent local affections with the insane is that malady of the external ear that we ordinarily designate under the name of *sanguinous tumor*, or *erysipelas* of the ear. The skin of the pavilion of the ear is tumified, becomes brilliant, tender and offers a fluctuation well marked; the ear thickens, it is bright red, hot, painful. If we incise the tumor, we see that it is formed by a cavity filled with blood, semi-liquid, which runs out by the wound produced, and is rapidly replaced; sometimes this pocket empties itself by spontaneous rupture. When we examine closely we find a sanguinous effusion beneath the perichondrium of the cartilage, which is as it were stripped. Generally the swelling and redness diminish in a few weeks, and nothing remains more than a thickness more or less considerable of the pavilion of the ear, *which is sometimes shriveled and deformed.*"

Marcé 453, says: "With cerebral congestion we note another

*See Blackburn Case.

remarkable complication, not for its gravity, but for its singularity: I wish to speak of the sanguinous tumors of the ears, or *hematomes auriculaires.*

"We find sometimes with the insane and above all with the paralytic, sanguinous tumors which are developed at the external face of the pavilion of the ear: described first in France, in 1838, by Ferrus, in his cliniques at the Bicétre. They have since been studied by Bellhomme, Cossy, Thore, Lunier and Renaudin, by Merland in his inaugural Thesis, 1853, and more recently by Foville who has designated more accurately than his predecessors the seat of the condition. In Germany, Bird, in 1838, published a good work upon the subject, and in 1848 Franz Fisher wrote an article for the Journal of Damerow. "It is almost exclusively with men that we observe this condition, and generally in general paralysis, but sometimes also in simple demency, acute mania and melancholy, where they are signs of its incurability; also we observe them in other affections than insanity, in hysteria, in typhoid fever, with professional wrestlers, with scholars with whom the ears have been pulled. (Bastien, Jarjavay, Mallez).

"The formation of these tumors has been attributed to a variety of causes; they have accused external violence, striking of the head against the walls, thereby injuring the ears, *and above all the afflux of blood towards the head.* There exists, in effect an intimate connection between the circulation of the ears and that of the rest of the head; every time there is cerebral congestion the ears become red and turgescent, sometimes they become pale as in syncope; in general paralysis where the congestion of the head is incessant, it is natural to think that the vessels of the ear dilate and thus favor the effusion of blood. This view is sustained by Bellhomme, Cossy, Renaudin, Delasiauve, and Foville in his *Recherches sur les tumeurs sanguines*

du pavilion de l'oreille chez les alienes. Ann. Med. Psychols, 1859.

"I will cite also an observation published by me in 1858, in which the eyelids were at the same time as the pavilion of the ear, the seat of a sanguinous collection, as if all the capillaries of the face were at the time the seat of the same turgescence.

"A little before the appearance of the tumor, we notice that both ears or only one, becomes red, sensitive and swollen; at the same time the patient presents all the signs of an active cerebral circulation; by times the skin has its normal color and the pavilion presents an odœma purely serous. The sanguinous effusion is rapidly produced, sometimes in seven or eight hours, and more frequently we observe its existence only when fully developed.

"The volume of the tumor is variable, it may be small as a pea or large as a pigeon's egg: it then makes a considerable projection, and when existing in both ears gives the physiognomy a singular and characteristic aspect. It extends to all the pavilion, except the lobule, obliterates the meatus and leads to deafness. The hard tumor sometimes offers a sort of crepitation within due to the crushing of clots; in some cases it is fluctuating at the center and indurated at the circumference."

Schroeder Van Der Kolk, *Pathology of Insanity,* 115, speaking of the nature of this condition, says: "The suspicion may easily arise that the swelling was the consequence of previous maltreatment. I have, however, observed one case where an insane patient made this accusation, but it was thoroughly unfounded, for afterwards without any obvious cause, a similar swelling appeared in the other ear." E. R. Hun, M. D., in the *American Journal of Insanity,* July, 1870, with photographic plates illustrates fully the *appearance* of the condition. (Cases in the New York Asylum, Utica). He says, "The form of insanity in 24 cases was: general paresis 8, melancholia 6, acute

mania 4, chronic mania 4, dementia 2,." It occurred 23 out of 24 times with men. Both ears were affected in nine cases, the right ear alone in nine cases, the left ear alone in five, in one case the records do not state which ear was affected." In relation to prognosis its importance may be seen by the fact: in nine cases the patient died insane at the asylum, nine were discharged unimproved and six remain in a state of dementia. He says it occurs only with the insane and denotes the incurability of the affection. "It is idiopathic, depending upon a pathological condition of the brain, and is incapable of being produced by external violence alone."

We believe the condition in question is one peculiar to insanity. We believe the cause to be, the most direct, the paralysis of the walls of the blood vessels, the organic changes consequent upon it, malnutrition, causing when there is afflux of blood the weakened walls to yield to the pressure, and without as well as within the cranium, effusion of blood. It is more frequently observed within the cranium, giving rise to apoplectic attacks, sudden loss of consciousness, or paralysis complete of one half of the body. Where the effusion is small the effects will be in a corresponding ratio less manifest. The condition is evidently due to the paralysis invading the vaso motor centers, inducing thereby stasis of blood, consequent upon which is the malnutrition of the vessels.

Morel, citing Calmiel upon the tendency of certain insane to suffer from attacks of erysipelas, says: "In the commencement of my practice, I confess that I did not take sufficient account of the attacks of erysipelas which with certain insane, invade the face, the scalp, neck; and of the phlegmons of the parotidian region; they ought to be taken into serious consideration.

"We think, says Calmiel, that these accidents ought to be classed among the manifestations purely essential and dynamic.

This is true for a great number of the insane, *and I except not the hereditary.* But it is among these, who owe their predisposition to inflammatory disease of the brain to their ascendants that I am speaking at this moment."

Thus those whose vegetative system is characterized by a depraved condition, without energy, as a consequence of hereditary influences are predisposed by virtue of this adynamic state to congestion and effusion.

Foville, *Recherches sur les tumeurs sanguines du pavillion de l'oreille,* p. 21, cites four conclusions of Bernard concerning the nature of these effusions of blood, deduced from section of the great sympathetic: "4. The formation of bloody tumors of the pavilion of the ear is most generally preceded by, and accompanied with a general disturbance of the circulation of the head, and it is worthy of remark that the increase of redness and of sensibility, that we demonstrate in these cases, resembles in a striking manner that which we observe with animals of which we have cut the great sympathetic at the neck, or have removed the superior cervical ganglion."

INTELLECTUAL PHENOMENA.

We have fully considered the physical symptoms and occassionally have made reference to the intellectual. We have already remarked that the intellectual phenomena are characterized by two features, opposite in character: expansion or exaltation, and depression or melancholy.

The *monomania des grandeurs,* ambitious delirium, has been by a few writers, and is still regarded by some, as *specific, i. e.,* characteristic of general paralysis. When we study the works of tho writers whose experience, ability and reputation entitle them to great weight, we find without exception they do not

accept this doctrine, but on the contrary emphatically declare it unsupported by correct observation. Calmiel, Baillarger, Marcé, and others, have so clearly proved the contrary to be true, that we have little confidence in the views of any writer upon any other point connected with the disease who does not repudiate this error of the past, for to adhere to it shows a limited knowledge of the subject, or an unwillingness to profit by the experience of others.

Bayle thought the *delire des grandeurs* the only type of mental phenomena existing in general paralysis. Is it correct? Do his own reported cases justify the conclusions?

Brierre de Boismont, Article: *Demence paralytique*, in the *Bibliothéque du medecin praticien*, T. ix, 548, speaks of the relative frequency of ambitious delirium. He says: In seeking the frequency of ambitious delirium in 42 observations in the work of Calmiel we have found 25 who offer this type; in 85 observations of Bayle, 52 presented symptoms of the mania of riches, honors, &c.," He remarks that some who did not manifest ambitious delirium at first, did later in the disease, and that with some who manifested this form of delirium early in the disease, later it was not manifest. In the pamphlet we have quoted before, upon the perversions of moral character in the prodromic period, he says: "We still remark that this delirium ought to be studied during the whole course of the disease; for some paralytics who at the onset have not exalted ideas of grandeur, manifest them later, and the contrary; in some cases these ideas are transient, flashing along like meteors."

Baillarger has made a similar remark. in *Gaz. des Hopitaux*, July 14, 1844, "some individuals who in the first stage of the disease do not manifest ideas of grandeur, offer them later, and *vice versa*."

Crozant expressed himself as follows in 1844: "The coin-

cidence of the *manie des grandeurs* and general paralysis is a truth that I am unable to comprehend but I am able to establish it. I affirm that there is not at the Bicétre, at this moment I have observations of them under my eye,—a single patient attacked with general paralysis who does not manifest ambitious mania, provided that at all times we properly interrogate him, and who will not be moved when we say he is either rich or poor.

I went through the Bicétre one day with a physician who devoted his attention to insanity, and asked him to show me one case of general paralysis that did not present this species of mania, his opinion nevertheless was to the contrary. After many attempts he led me with an air of triumph to one and asked him before me whether he was rich, whether he was a prince or worthy to be one, or hoped to be one in the future.

The patient replied very wisely that he was a tailor, that he scarcely gained a support for his family and that he never had other troubles than to do well his calling. All his conversation was very reasonable, and to the physician seemed very fairly an exception. I hesitated not to show him he was mistaken. In interrogating him in detail upon his condition, upon his business and his manner of pursuing it we found we had a tailor the most expert, the most distinguished, the most eminent that ever lived, a tailor most vain, proud, one could find. My *confrere* declared his error. The paralyzed show this presumption in all that they touch; their beauty, their health, their muscular force, their talents, are in succession boastingly displayed, in a manner the most pompous, and with rich images and epithets." (*Gazzette des Hopitaux*, April 26, 1842.)

The most recent writers are disposed to multiply varieties, and perhaps to too great an extent, dividing and sub-dividing

until one becomes weary in tracing out all the details upon which the divisions are based.

Briande and Chaude, in the new edition of their classical work upon Legal Medicine, make *four* varieties.

Marcé divides general paralysis into four varieties; *two* are based upon the *intellectual* phenomena; *two* upon the *physical.* They are: 1. Expansive; 2. Melancholic; 3. Paralytic; 4. Congestive.

We will consider the *melancholic* form, in connection with that of exaltation, as the relative number of each, the frequency, will be better determined, as well as other facts.

Marcé describes the *expansive variety* as follows: After a prodromic period, of which the duration is variable, the patients, now violent and irritable, become little by little, more active than is consistent with a normal state. They write, compose, speak, move without cessation, form, without cessation, new projects, and think nothing impossible; at the same time their memory weakens; they forget that which they have done a few hours before. Without having yet the seal of ambitious delirium, their conceptions are difficult to realize, based upon foundations unsound, and present a striking contrast with all the habits of their life. On the side of the organic functions the excitation betrays itself by symptoms not less decided; these patients cannot remain an instant in a place; they feel the need of walking, of running, and are indefatigable; I have seen a landlord, at this period of the disease, strike with force, wanting power to repeat it, the furniture and staircase of the house where he lived. It is with these we observe a *genesique* excitation that is insatiable and which respects nothing that will satisfy it, and which forces, even in public, to most deplorable acts; with others it causes an unquenchable thirst for alcoholic drinks which aggravates the disease. There results from

it a disordered and irregular manner of living, excesses of all kinds and delirious acts which attract attention.

These patients quit their homes, wander in the streets and fields, undress themselves, sleep in the open air, purchase at shops and hire conveyances by the day without power to pay for them, even commit thefts of a special nature, as if without intention and by mistake, from the front of a shop or a store window. It is at this period that, under the influence of this impulse to continued action which rules them, of this spirit they manifest in everything and which renders them fearless, bold, and disposed to doubt nothing, that the subjects the most avaricious, the most stingy in their dealings, enter upon hazardous speculations, foreign to all their former prudent and well-considered habits, make purchases out of proportion to their resources, and give orders to fit up their property and embellish and adorn it in a way they can never realize.

When the cerebral excitement arrives at this degree it soon assumes the proportions of a veritable maniacal delirium, and then shines out in all its plentitude the delirium of ambition, so curious, so characteristic, so variable in its manifestations. Most generally the ruling ideas are of money and riches. The patients refuse to work; they acquire 20 francs, 100 francs, 100,000 francs per day. Without transition they gain millions, and even more as declared daily by them. They possess castles, immense lands; they speak of gold, of diamonds; they regard the walls, the furniture, the objects which surround them as formed of precious metal; in their expansion that nothing limits, they make considerable presents to their friends, relatives, and promise fabulous sums for the most trifling service. To the ideas of richness they add ideas of glory, honor and power. They are presidents, kings, emperors, according to the political form of government, or system of their age; they flutter with

ribbons of all colors, with titles of nobility, giving themselves titles of illustrious birth, going even further, regarding themselves as endowed with supernatural power, genius; they are Gods themselves. Nothing equals their grand conceptions, their gigantic projects; they wish to change the surface of the earth; they give a banquet to the universe upon a table a thousand miles long; they are going to create men 30 arm-lengths high; they can heal the sick; bring to life the dead.

At the onset of the paralysis while the intelligence preserves yet a certain force, this delirium can be produced with a richness of imagination, with a vivacity of colors attaining to the most strange conceptions, and the most fantastic, ending always in a state of good fortune, of riches, of power not only for the patient, but for all who surround him. A paralytic informed me that he was about to create a new world, traversed by rivers of immense size, filled with gigantic fish, and valleys of extraordinary fertility; every inhabitant of his palaces should have 100,000 francs income and live in extreme good fortune. He would be God and his wife a Goddess.

This ambitious mania which can vary to infinity, never arrives at its complete development at the onset of the disease; then it may be of a modest nature, announced by a certain reserve, and is progressive but as the patients advance with the disease. The poor workman, interrogated upon his fortune, doubles the price of his day's work, and counts upon resources he does not possess; but his pretensions are so little exaggerated that research into them alone will reveal the truth. The merchant, the manufacturer attribute to their industry proportions far exceeding the truth and which they have in no way realized. It is but progressively that these exaggerations reach an extreme degree and strike all by their unreasonableness.

At the side of this delirium of ambitious form there exists

another variety, which though less marked than the other, possesses as considerable semiologic value; the patients attacked have not so to speak delirious conceptions, but they live in a state of happiness and self-satisfaction nothing can alter. They make pretensions to poetry, to literature, to force; they feel vigorous, endowed with robust health, never were they better. They bare their arms, admire the beauty of their forms, the vigor of their muscles; full of an unaccustomed coquetry they pass hours before the glass, painting themselves, smoothing and arranging their toilet; their countenance is open and smiling; they approach with open hand, obliging, affiable, satisfied with all, and show with pride their houses, furniture, clothing and the most minute objects they possess. This form of delirium is prolonged often during the last periods of general paralysis, contrasting in the most powerful manner with the degradation, physical and intellectual, manifested by the patients; but in reality they show no suffering and are only happy fools.

Thus, as has remarked with much justness, Falret, the ambitious delirium of paralytics, whatever it may be, complicates itself with the assembly of characters of demency. Very different are the monomanias of pride, which systematize their delirium with perfect art, conform their actions to their words, and sustain their convictions with vigorous logic; paralytics are remarkable for the particular nature of their absurd ideas, ambitious, multiplied, contradictory. We see very soon that with these patients, memory, reason, and logical sense are profoundly attacked; they speak of leaping the Seine on stilts, of building a village of gold, of creating a universe. To-day they are an Emperor, to-morrow they will be King, Pope, a General or God; they show no fixed opinions, but cede willingly if we contradict them, passing from one idea to another, are afflicted and mournful the same moment, forgetting the false conceptions

they had the evening before, and when we interrogate them they relate parallel their real and imaginary life.

"2d *Variete Melancholique.*

At the side of the expansive form, at the onset of general paralysis, we notice the melancholic variety which makes with the preceding so striking a contrast. Calmiel and several authors have remarked that if we inquire with care into the history of paralytics found in the asylums, we will show the existence of a melancholic state, sometimes short sometimes very prolonged. The patients believe themselves ruined, lost, dishonored; we see them fly; they have committed crimes; they are destined for prison or the guillotine, and have ideas of suicide, even attempt it; they offer, in a word, that assembly of symptoms, of delirious conceptions and acts which constitutes melancholic delirium. Often, and this fact strikes me forcibly, in the midst of the most oppressive, false ideas, we see appear ideas of grandeur, riches, and pride, which manifest themselves at irregular intervals, and in a light manner, the patient forgetting them a moment afterwards, and which contrast so strangely with their attitudes and lamentations. With these subjects, melancholic depression can extend even to stupor; they remain incapable of acting, mute, immobile, refusing all food, falling as often as we raise them or they attempt to walk, and having to a certain extent knowledge of their physical and moral annihilation.

"Melancholic ideas can be associated with hypocondriacal which give to the patient a peculiar physiognomy. Not only the patients are mournful, dejected, but still they experience a vague and general *malaise* which shows itself and is correlated by the fear of death, by fantastic conceptions, and singular views of the manner in which their organic functions are executed. They declare they can neither swallow, urinate nor go to

stool; that their intestines and natural passages are closed. That they have no longer throat, stomach or belly. This form of delirium is not specific, as insisted upon recently by Baillarger, and has no value in a diagnostic point of view except when associated with lesions of motion.

The melancholic or hypochondriacal delirium, as well as the disposition to commit suicide, and the stupor, may be prolonged many entire months; I have even seen it persist to an advanced period of the disease and give place but slowly to ambitious ideas or to an abnormal state of satisfaction and well-being. Experience shows, moreover, that this variety of onset is very grave, and that often it accelerates the fatal march of the disease. The melancholic depression, refusal of food, add themselves to the other symtoms of general paralysis; they result in profound lesion of nutrition, emaciation, tendency to sloughs, and a promptly, mortal adynamic state.

All writers say that in all these cases the delirious conceptions, melancholic or hypochondriacal, are so decidedly marked that at the onset they mask all other symptoms, and under the diagnosis of general paralysis, very serious, until later when it becomes clearer. In these cases it is necessary not to forget the embarrassment of speech, inequality of the pupils andthe troubles of motion existing here as in other cases, but with variable shades and going back far into the antecedents of the disease, we find almost always a weakness of memory that has preceded several months the appearance of other symptoms."

Notwithstanding that Marcé, Calmeil, Baillarger and others mention the melancholic variety and the fact that the depression amounts in some cases to actual stupor, late writers, those who are in positions calculated to render them familiar with these facts, assert as if a newly discovered truth, they have not seen this mentioned before. The American Journal of Insanity, for

April, 1872, contains the views of Dr. Gray, Superintendent of the Asylum at Utica, Editor of the Journal. The article containing his views is entitled: *Psychological Retrospect;* being a review of the English Psychological Literature for 1871. The reviewer uses this language concerning the name of the disease: "We believe, with Dr. Bacon, that the term General Paralysis is 'bad enough.' It is a much less accurate and scientific term than General Paresis, *as there is no paralysis* in any just sense of the term in this disease." The views of Dr. Gray referred to are taken by the reviewer from an asylum report. We present it at length, as it covers other points as prognosis, &c. Dr. Gray says: "Since my connection with the institution 198 cases of paresis have been admitted. Of these no case has recovered, though in a number remissions have occurred, in which the mental disturbance seemed entirely to have disappeared. Four years ago, in a paper on general paresis communicated to the State Medical Society, I reported a case where this remission continued for almost a year. A most important question has been, what physical symptoms precede the mental disturbance? In the paper alluded to I made the following remarks upon this point:

In some cases there is a well-marked stage of stupor and drowsiness preceding this excitement, during which the patient complains of cephalgia, of languor, and inaptitude for exertion; and of confusion of thought, loss of memory, and uncontrollable disposition to sleep. During this stage there is often a vague consciousness of illness, though the character or weight of the disorder is not suspected by the patient or his friends, but as soon as the stage of exaltation and excitement supervenes, the patient feels strong and vigorous, and persists that he never was so well in his life.

This state of drowsiness, cephalgia, and consciousness of in-

disposition, preceding that of excitement, we have not seen mentioned, yet we have, in personal experience, the most unquestionable evidence that many cases are thus initiated, and we believe that the non-recognition of this stage is doubtless because patients are not placed under treatment in asylums during its existence, and the family, or friends, give the history, dating the insanity only from the marked symptoms of cerebral excitement; the preceding history involving this stage, is not obtained. Careful inquiry from those intimately associated with patients during the incipient period, and in one instance, the diary of the patient, and in another the letters written before insanity was suspected, established this stage."

Thus the acute, well-informed observer, Dr. Gray, has set forth the same facts observed by continental observers, his own penetrating mind having at about the same period of time, or but little later, discovered the same facts, which a study of French and German authors would have revealed to him. He goes on in the asylum report to speak of headache, dizziness, dullness and drowsiness, a sense of insecurity in walking, of muscular weakness, having preceded the full outburst of the disease for many months—one case two years. He says: "He suddenly became maniacal and violent; attacked physician and others. In the office was excited in manner, and showed a slight hesitancy in pronouncing certain words. Muscular tremor could be felt in fingers and hand when arm and hand were extended. There was slight vibratory movement of the eyeball, also a slight twitching at the angles of the mouth. The tongue, when protruded beyond the line of the teeth, was suddenly retracted. Lips were highly congested. His gait was characteristic—shuffling, irregular, uncertain; one foot was lifted higher than the other, and the heel was dropped more heavily. Complained of occasional spasm of the throat, as though a

hand had suddenly grasped the larynx. Maniacal excitement continued for a short time only. This was followed by marked mental enfeeblement. Paretic seizures supervened, which were repeated until paralysis became complete, and the patient helpless. In this condition bed-sores were developed, and the patient demanded great care. He died from paralysis a year after admission."

Griesinger says: "At the onset of general paralysis the intellectual disturbances present not always the same character. It is rare that we do not observe a melancholic period, which manifests itself sometimes as a simple depression, sometimes by very marked hypochondriasis. Very rarely do we see supervene the first lesions of movement during this period of melancholy; nevertheless, as has been observed by Calmiel, p. 328, this does occur, patients still having for some time melancholic delirium which transforms itself into demency."

Brierre de Boismont, in the work cited, Observation vi, p. 12, reports a case of the hypochondriacal form that is very interesting, the more so as Calmiel, Parchappe and Brierre consulted and together made the diagnosis. It is also interesting as an hereditary disease. He says: "This observation, the subject of which has never been lost from sight, is interesting on account of more than one point. We follow at first step by step the long incubation of the general paralysis to which this unfortunate organization is thus to say, fatally predisposed. A first derangement of mind, characterized by an exaggerated hypochondriasis, announces the approach of the disease; this fact confirms the opinion advanced by Baillarger, upon hypochondriacal delirium, considered as a precursor of general paralysis.

* * * This phenomenon is followed by symptoms of paralytic mania of ambitious form, and this, after a duration of some months is replaced by paralytic demency, mingled now

and then with melancholic depression, in which the patient dies, after a struggle of more than two years."

Calmiel says, T. i, p. 276: "The melancholic type occupies a place as important among the functional manifestations of general paralysis, and since twelve years, *is as frequent with the subjects of attacks as the monomania of ambitious form.*"

Baillarger observing the great number of melancholic cases of general paralysis, and recognizing the truth of the assertion of Griesinger, that there is with all cases a period more or less prolonged, of melancholy, at the onset, in 1860, read at the French Academy of Sciences a paper declaring that *hypochondriacal* delirium is the special delirium of general paralysis. In the appendix to Griesinger he says: "In place of but one special delirium in general paralysis, there are *two*. The ambitious delirium will be the special delirium of the monomania and of mania, *i. e.* of the forms we call *expansive;* the hypochondriacal, on the contrary, will be the proper delirium of the melancholic forms we call *depressive.*" Moreau, Michea, and Dufour subsequently affirmed the same of general paralysis.

Dr. Comes reported to the French Academy a case of the melancholic form, in a thesis advocating this view, in which the predominant idea was that the patient was *lost*, "*that he is going to die, if he is not now dead, and that his members were annihilated, that he has no limbs.*"

Baillarger remarks concerning the *stupor* observed with some cases, that it greatly hinders investigation and renders more difficult a correct diagnosis.

Writers mention as a feature of the melancholic form, bad, offensive breath, a loaded tongue, &c. Authors mention that the melancholic cases frequently declare they are insane, are about to die, have lost some important organ, as the heart or stomach, that the pulse has ceased to beat, that their bowels are

so sealed they can never move, that they have lost all power to do certain things which it is wholly in their power to do if they could be so convinced, &c.

We will not multiply authority upon this, but close this division of the subject by one more quotation from Brierre—his work upon *Suicide*. We have all the important foreign works upon this subject but none except this contain any thing directly to the point—being silent upon the subject in general.

Brierre, *Du suicide et de la Folie Suicide*, p. 224, says: "Suicide has been reported several times in the course of general paralysis. It exists with that species of alienation of a melancholic form, less frequent than the ambitious variety; it is not rare, in these cases, to hear the patient say he is insane, lost, and that nothing remains for him but death; I have had care of several who have made attempts and have wished to die of hunger. Sometimes the paralytic will end his own life without having knowledge of it. One drew his cravat so tight around his neck that when we found him he was not conscious. He would have repeated it had we not taken measures to prevent it."

COURSE; DURATION AND TERMINATION; PROGNOSIS.

Nothing is more important in the diagnosis of any given disease, that is obscure, than to determine when its existence is suspected whether the history of the case conforms to the course, duration and termination of such disease. Thus if the universal result of the disease is *death*, and the patient recovers, our faith is shaken—we suspect our diagnosis is incorrect. Again if a disease runs a speedy course and our case is prolonged over many years again we doubt. It is important to determine at the outset in all cases, whether the disease is one that is *self-*

limiting, i. e., runs a definite course, in a given time, or one that may be prolonged an indefinite period, and also whether it be curable or not; this determined prevents oftentimes useless medication, anxiety and suspense, and is the means of preserving the reputation of the medical attendant, for who is there that will retain the confidence of patrons when after months of medication they learn the disease is one that is incurable. But however unfavorable the prognosis it is all the more important that it be formed, and that it be based upon correct diagnosis.

What is the course of general paralysis—uniformly steady in its progression, or does it at intervals retrograde, remain stationary, or seemingly disappear, thus prolonging life and extending the course of the disease? What is the usual duration of the disease? The same "Psychological Retrospect," in the American Journal of Insanity, reviewing a paper from Dr. Boyd in the Journal of Mental Science, Oct. 1871, contains the following: "Dr. Boyd has in this number continued his observations on General Paralysis, and the morbid changes of the Spinal Cord. The Doctor very justly remarks, that any hope we may have of being able to arrest the progress of this disease, or to promote recovery, must rest on a just appreciation of its pathology. He quotes cases, given in his former communication as proving the fact, that by rest and proper treatment, the progress of the disease may be checked, even when the symptoms had continued for some time. Two cases discharged recovered were readmitted, one two years, the other thirteeu months afterwards. Another case now in the asylum, is said to have recovered from the paralysis; and in another case, the paralytic symptoms were arrested, without mental improvement for six years; such cases, we believe, can be quoted from the records of all institutions, where this form of disease has occurred to any extent, and where no treatment of any

kind has been employed. They cannot in fairness be called cases of improvement, or recovery by the use of remedies."

The duration of general paralysis varies from a few months to several years, and is dependent upon the intensity of the attack and the progress of the disease as modified by remissions, in which the progress for a season seems arrested.

Sauze, *Ann. Med. Psychol*, 1860, p. 493 says: "Remissions may present three forms. In the first, we see disappear entirely the signs of paralysis and a persistence of the demency; in the second, the paralysis persists and the intelligence approaches a normal condition; the third consists in an improvement of both the symptoms of paralysis and demency. In all the remissions whatever may be the ruling form we encounter one common symptom: a weakness of the intellectual and moral faculties. These patients ought not to be considered as free moral agents; and in their own interests as well as those of their family they should be interdicted."

Dagonet remarks that these patients return almost to a normal state of health, and even appear healed, after having manifested the gravest symptoms. He says: "We have encountered striking examples; the symptoms of irritation retire little by little, motion retakes insensibly its functions as before, stammering and embarrassment of speech are dissipated, the delirium effaced, the individual attains to such a degree of health as to lead one to believe the recovery more or less complete. *This period of remission may have a prolonged duration sometimes even of many years.*

General paralysis has a variable duration; in some cases it is arrested at the first period, sometimes at the second period; it can then remain stationary for a great number of years, before resuming its progress.

Sometimes, as Trélat has remarked, *it is galloping*, and runs

its different periods in an extremely brief space of time; sometime weeks suffice to terminate it in a fatal manner. Rarely this disease terminates, nevertheless, in death in the course of a year its medium duration is two or three years; notwithstanding, this depends on the care given them.

Death occurs most frequently during the second period after a series of epileptiform convulsive attacks, or hypostatic pneumonia. When the paralysis reaches its last period, we observe a state of weakness and muscular paralysis that makes deglutition and respiration difficult which causes inanition and asphyxia."

Griesinger says: The duration of general paralysis varies from a few months to about three years. There are some exceptional cases (Brierre, Trelat,) in which the disease has lasted much longer, even ten years, *but it presents then long periods of remissions.* When the patients are cared for in their families they live longer than in the asylums; they ought to have the same care as little children. The attacks of congestion of which we have spoken exercise a bad influence upon the disease by greatly accelerating its progress; often even we see the disease aggravated from day to day without appreciable cause."

Griesinger says: "General paralysis is characterized by a progressive course, but in general this progression is rather irregular than constant, it is often even by abrupt spells. It is very frequent that we see supervene remissions as well in the intellectual as in the symptoms of movement; in some cases the patient presents no longer a trace of delirium; he can engage in his affairs; the signs of general paralysis being confined to a light stammering—a certain weakness of intellect and of character. These remissions may last a few weeks—we have seen them a year and a half; at all times these slight symptoms are sufficient to declare the individual not of healthy mind, and this in certain cases is of great importance as strangers to medi-

cine do not discover evidences of insanity. Often these remissions are interrupted brusquely by congestive attacks, in consequence of which the patient refalls into a grave condition and the paralysis marches on to a fatal termination."

Tardieu, *Manual de Pathologie et de clinique medicales*, p. 563, presents a *resumé* of the subject of general paralysis, worthy of translation. We do not think he correctly represents the literature of the period in all respects—the reader will however now be able to observe for himself concerning this point. It is as follows:

"*Folie paralytique* * * * is one of the most decided forms of insanity and almost constitutes a distinct disease. But it is certainly one of the most frequent forms of mental alienation. Among the general causes we cite, having the greatest influence upon the production of general paralysis, are drunkenness, venereal excesses, abuse of mental labor, reverses of fortune, torments of ambition. It is, above all, in the higher classes, a little more frequent with the men than women, and toward the term of adult age, that the disease is developed.

An attentive observation demonstrates, that almost constantly general paralysis is announced long enough in advance by very characteristic precursory phenomena. Sometimes a sudden cerebral congestion, with slight loss of consciousness is the first sign of the lesion that attacks the encephalon. Several successive attacks precede the proper phenomena of the paralysis. At the same time the constitution weakens by degrees; the character is insensibly modified, and these changes result generally from exaggeration of the qualities and defects, by a susceptibility, a very great irritability, an extreme facility to become angry. The least labor causes fatigue, a little tingling is felt in the hands; and when the patient is fatigued or animated by discussion we observe a slight embarrassment in the

speech, the pupils are unequally dilated. Under the influence of congestions more or less frequently repeated, this trouble augments, the movement of the members are badly executed. Little by little the memory weakens; in writing the patient forms the characters badly, omits letters or even whole words. The mind is idle, apathetic, and unable to find words or to express its thoughts. Aberrations are manifested in the acts. From time to time nevertheless the intellect awakens and presents an increase of activity excessive, but it soon again falls into a state of torpor where it languishes even to the day when without apparent motive breaks out an attack of acute mania, or furious delirium, with hallucinations that last several days, rarely several weeks. At the issue of this paroxysm, the lesions of movement of the tongue and other members have made great progress, and the maniacal delirium is replaced by a partial delirium, which consists almost exclusively in ideas of grandeur,(?) of riches and of ambition.

At variable intervals, we see reappear a period of excitement characterized, may be by congestion, may be by epileptiform convulsions, may be by only the return of the agitation and the fury. It is to these congestive movements toward the head that it is necessary to attach these infiltrations of blood into the cellular tissue of the eyelids (Marcé) the sanguineous tumors of the ears, seated between the perichondrium and cartilage (A Foville), and pointed out by several authors in general paralysis: Ferrus, Bird, Franz, Fisher, Belhomme, Cossy, Thore, Lunier, Renaudin.

With some patients during entire weeks, the convulsive attacks are reproduced several times a day and the excitement is prolonged a considerable time afterwards. In certain cases the disease remains stationary during several months or several years, but most frequently at each paroxysm the disease makes pro-

gress. The intellectual faculties weaken more and more; the walk becomes more and more difficult; articulation is very difficult; the monomaniacal delirium persists with the same characters. Soon it is necessary to keep the patient confined to the bed; the head no longer sustained falls upon the breast; the legs cannot support the body; the hands are incapable of seizing or of directing objects, the taking of aliments is even impossible, deglutition is performed only with the extremest difficulty; the stools and urination become involuntary. This exhaustion leads to a premature old age; all sensibility is extinguished, all intellectual expression or delirium has ceased. Feruncles, abscesses, disseminated eschars upon various parts of the body complicate this frightful disease, to which death comes happily to put an end inevitable. Death results at times from asphyxia caused by food passing into the air passages; more rarely it follows at a stage more or less advanced of the disease, upon an accession of maniacal agitation.

General paralysis is characterized by constant special lesions, which consist in chronic inflammation of the *pia mater*, and the gray substance of the brain."

The termination being death there is no grounds upon which to base any favorable prognosis. The few cases reported as cured are so very limited in number, compared to the frequency of the disease and the numbers affected, that we may say *it is incurable.*

VI. Our sixth and last division of the subject is the

PATHOLOGY.

We omit much that we have written upon the functions of the cerebrum, whether there be motor centers in the gray sub-

stance, the functions of the spinal cord, and the character of phenomena indicating lesion of particular portions of nerve structure. To do justice to the subject of the pathology, not only results, *i. e.*, not only anotomico-pathological conditions should be considered, but the action of causes whereby results are brought about. We should try to determine what structural changes induce lesion of intellect, what of motion, and what induce lesions of sensibility.

According to Parchappe, Delaye, Foville and Pinel-Grandchamp the following conclusions exhibit these points:

"1. The alterations of the cortical substance are closely related to intellectual derangements.

"2. Alterations of the white substance are directly related to alteration of movements. The anatomico-pathologic character of general paralysis of the insane consists in an induration of the white substance of the brain."

Bayle, as we have remarked, attributed general paralysis to inflammation of the membranes of the brain.

Parchappe, in 1838, attributed the disease to alteration of the cortical substance, and termed it a distinct species of insanity.

Morel, 805, says: "The lesions of cortical substance so clearly described by Parchappe in 1838, are clearly recognised today by all physicians. That which separates them is the question as to whether the morbid action has its seat of origin in the membranes of the brain or in the brain itself."

Belehomme thought lesions of intelligence precede always those of motion, and lesions of the cortical substance those of the white.

Brierre and Duchenne thought general paralysis a special form of disease, that might be distinguished as a cerebral disease from disease of the spinal cord by the means of electricity. Other observers found that while spinal disease prevents

muscular contraction, muscular contractility is much lessened in some cases of general paralysis, but this is probably due to implication of the spinal cord.

If we believe the centers that co-ordinate muscular action are in the gray substance of the brain, then this explanation is unnecessary. The muscle may contract from the power inherent to the cord, yet there will not be co-ordination if the centers in the brain are not intact. There can be no question that "muscular sense" is located in the brain—that feeling or consciousness of muscular action that enables us to recognize precision and co-ordination, yet there is *apparently* such independent action of the spinal cord as to induce some to believe the cord endowed with consciousness. For instance, when a person has co-ordinated muscular action for a long period in a certain direction, as performing upon the piano, it is but necessary for the will to institute the action when it will be continued, the attention being directed wholly to conversation or other matters, and not to the performance.

We desired to discuss these questions to considerable length, but as our paper is now drawn out to great length we will reluctantly pass them and will in future give them attention in connection with nervous disorders, hoping that more extended research may enable us to present the subject better than at this time.

Falret thought general paralysis a special form of insanity, the most natural of all because of the union of mental and physical symptoms.

Parchappe, p. 25, says: "Is not a disease a distinct morbid species which is produced under the influence of causes that produce super-excitation of the brain, principally with men and at the age of virility of which the symptoms may be expressed as a general and simultaneous lesion of *intelligence, voluntary*

movement and *sensibility*; which has for its seat the cortical substance of the two hemispheres of the brain; which has for its anatomico-pathologic character constantly, a softening, the result of inflammatory action of the cortical substance in the two hemispheres; which disturbed by cerebral congestion more or less violent from day to day, causes a weakness more decided of the intelligence, of motion, of sensibility, ending in death by congestion or cerebral marasmus."

Tardieu, *Manuel de Pathologie et de Clinique Medicales*, 564, says: "*Folie paralytique* is characterized by constant lesions, altogether special, which consist in chronic inflammation of the *pia mater* and of the gray substance of the brain (*meningo-encephalite diffuse* of Calmiel, Bayle). At its onset this inflammation presents, upon the gray substance and upon the corresponding points of the *pia mater*, rose shaped spots, formed by a great number of little ecchymosses, in close proximity, presenting a very apparent mark, tenacious, not disappearing even by the most prolonged washing. This roseate coloration occupies at first the superficial layer of the gray substance, but it delays not to invade all its depth. The situation and number of these points (*plaques*) is variable; sometimes we find but few, sometimes they occupy all the surface of the brain. They are habitually more numerous upon the part of the hemispheres we call the frontal cornu. At first these spots present a circumscribed redness resisting washing and maceration. Later, in the same points, are formed adhesions of the *pia mater* of the brain; and when we have deprived the brain with care of its membranes a part more or less thick of the superficial cortical layer remains adherent to the *pia mater*, so that the brain seems to be the seat of irregularly round ulcers of which the bottom presents a rosy gray, granulated aspect.

At length when the lesion has attained the last degree of its

evolution, the adherence is general, and it requires much labor to separate the *pia mater* from the brain, of which the torn, roseate surface presents in certain places a total oblation of the gray substance. This, at the same time, becomes friable, and as if formed of little grains having a substance analogous to that of tuberculous matter, and crushing as it were under the finger. The *pia mater* is red, thick and adherent to itself in places where it is in contact, so that a variable number of circumvolutions are found intimately united.

By microscopic examination we observe the increase of diameter of the capillary vessels of the *pia mater* and of the softened gray substance, as well as their multiplication. This increased vascularity extends even to the white substance.

Further, the walls of the capillaries are incrusted with fine molecular granulations or sprinkled with little agminated cells which abound in the bifurcations of the vascular trunks, and the tube of these is encumbered with sanguinous globules piled up so as to render all circulation impossible. Some piles of extravasated globules, more or less deformed, we encounter equally in the gray substance concurrently with plastic molecular granules and little spheres or disks finely marked, which constitute here and there groups or trains in the angles corresponding to the branching of the capillaries.

The extravasation of a blastema has for a consequence the organization of plastic products which alter profoundly the parenchymatous texture of the cerebrum.

The nerve cells are rare, their contour losing its perfect state and normal aspect, they are deformed, and end by emptying their contents. The nerve tubes are deformed, atrophied, their contents escape without, and they present no more an appearance of a tube, but of *debris* scattered under the field of the microscope. (Calmiel, Marcé, Luys).

To this principal lesion are joined others which are directly connected with it: injection and thickening of the bones of the cranium; opacity of the membranes; dropsy of the ventricles; granulations of the serous membranes, which cover their walls; atrophy of the central circumvolutions, false membranes, sanguinous pellicles, fibrinous growths, hemorrhages encysted, in the great cavity of the arachnoid. (Calmiel, Bayle). Paralytic insanity is very often complicated with organic lesions very diverse of the thoracic or abdominal viscera."

Calmiel, T. i, presents in the third chapter of his work upon Inflammatory Diseases of the Brain, a synopsis of thirty-seven cases. I translate it from the work.

"The observations contained in this chapter are thirty-seven in number, of which four only are women.

Among the men, we observed four patients aged thirty to thirty-five years, eleven aged thirty-five to forty years; ten aged forty to forty-five, three aged forty-five to fifty years; two aged fifty to fifty-five, two aged fifty-five to sixty, one only aged sixty five years. The youngest woman was thirty-five; the oldest forty-eight; the two others placed by conditions of age between forty and forty-two years.

The average age of the thirty-three men is at the onset of the disease, forty-one years. (I fix the *debut* at the day we first notice the manifestation of the muscular symptoms). The average age at death is forty-one years and sixty-three hundredths. They have then lived six months and a fraction. The average age of the women at the onset was thirty-eight years seven months; they lived an average of thirty-two months. * * * * The troubles of intelligence have assumed the form of *general mania* in *nine cases*, with or without furor.

They have assumed the form of a *profound melancholy in six cases*, the form of *ambitious delirium* complicated with *exaltation*

in *five* cases. In *six* cases the symptoms are manifest under the form of *demency* complicated with variable and restrained delirious conceptions. In *nine* cases the intelligence was struck with impuissance or paralysis. Sometimes the expression of intellectual troubles has been more variable; in general, even this expression has not been uniform except in extreme demency. Chronic diffused periencephalitis, in the simple state, has never failed to show lesion of motion.

Embarrassment of speech has not been wanting in but one case of the thirty-seven. The *walk* was unsteady or almost impossible in all the cases we have cited. Weakness of the arms has been observed in twenty-three cases; nine patients presented spasmodic twitchings of the muscles of the face; three grinding of the teeth; several have had difficulty of swallowing food, and in passing urine.

Almost always the lesions of motion are manifested in the first times of the phlegmasia by the impossibility which these patients find of regulating the action of the muscular agents, of which the contractions are accomplished but by irregular efforts and without precision. At length, these same agents find themselves with still greater loss of power and this impuissance constitutes a true state of relative paralysis.

The modifications which are produced in the condition of the skin, respiratory functions, and digestive functions cannot be indicated in a satisfactory manner in a simple analytical table, for they are often varied from one day to another with the insane, with the subjects of ambitious delirium: we can say nevertheless in a general manner that general paralysis when announced by a violent maniacal exaltation is accompanied by heat of the skin, dryness of the tongue and lips, thirst, disgust for alimentary substances, accelerated pulse. It is almost always the same when the periencephalitis appears with a

violent ambitious delirium; but when the subjects resist the first shock of the phlegmasia, the thirst, and redness of the tongue disappear, the appetite is re-established, the pulse ceases to be accelerated, and then ceases the general lesion of function.

Paleness of the tongue, distaste for food, observed very frequently with the melancholic form of general paralysis, are almost always accompanied with coldness of the extremities, paleness, and weakened pulse. In the forms characterized by dementia the state of the intra-cranial nerve centers exercises but insignificant reactions upon the general functions: the tongue is moist, no thirst, the appetite either ordinary or voracious, digestion rapid, pulse natural.

The *cadaveric* alterations shown in the thirty-seven cases may be enumerated as follows: The substance of the cranial bones has been found colored red in a notable manner in ten cases; the vessels of the cerebral dura mater were injected in six cases. The cavities of the cerebral arachnoid contained serum in fifteen cases; false membranes in three cases; coagulated blood in one case.

The vascular net work of pia mater has been found more or less red and injected in thirty-one cases; infiltrated with pus in one case; infiltrated with serum in twenty cases; thickened in seven cases; marked by opaque lines in nine cases. It adheres with more or less tenacity in thirty-five cases.

The cortical substance situated at the periphery of the same hemispheres is remarkable for the degree of coloration, red, violet, rose, or by the degree of sanguinous injection in thirty-four cases. There was softening in fourteen cases; excess of resistance in five cases; atrophy in four cases.

The white substance which constitutes the greatest part of the cerebral mass was found injected with blood in twenty-three cases; too great firmness or induration in thirteen cases; too soft in three cases.

The thalami optici were remarkable for their intense redness in fourteen cases, orange or yellow in three cases; too hard in one case; too soft in one case.

The corpora striata offered tints of flesh color or violet in eighteen cases; orange in four; hardened in one case; softened in one.

The walls of the lateral ventricles were injected in four cases, covered with miliary granulations in five cases; bathed with serum in six cases; softened in two cases, hardened in two.

The *pia mater* of the cerebellum was colored and red, injected, in nine cases, slate color in one, adherent in twelve cases. The cortical substance colored red seventeen times, injected ten times, colored orange five times, softened eight times, hardened in one. The annular protuberance red or rose colored in its center in fourteen cases, orange in three cases, atrophied in one case, softened in one case, hardened in one case, in one case contained a small cicatrix.

The medulla oblongata presented coloration in eleven cases, a rusty tinge in one, was atrophied in one case, hardened in two cases, softened in one case, its proper membrane covered with fibrine once.

The spinal marrow was covered with depressions in one case, hardened in four cases, softened in one, colored or injected in four, soot color in one, covered with plastic coagulation in one case.

Twelve brains were examined with the microscope, without counting those cited in our corollaries. These examinations were made in one case where the delirium had presented the character of mania, two of melancholic delirium, one of ambitious delirium, three of demency with delirious conceptions, three simple demency, one where the patient was epileptic. It is difficult to represent in figures the alterations observed, *yet certain alterations were almost constant.*

Of these were infiltration of the cortical substance, its disintegrated state, its sanguinous injection, its being dispersed with granular elements, sometimes upon the walls of the vessels, sometimes upon the surface of the great nerve cells; the state of injection of the vessels of the corpora striata; the presence of molecular granules and of little agminated cells in the midst of the gray substance in these same columns, the dilatation of the vessels of the cerebellum, of the annular protuberance, the formation of granular products upon the vessels or in the gray substance of these same regions; at length the dilatation of the vascular net work of the *pia mater*, its infiltration."

The relation of Progressive Locomotor Ataxia to General Paralysis, is interesting as a study, especially the relation of the respective lesions of motion observed; but this will render it necessary for me to present what I have omitted upon the functions of the spinal cord, etc.

In both diseases there is not so much *loss of muscular power as want of co-ordination.* When there is some support muscular power is great, thus the paralytic when lying upon his back can exercise the arms and legs with great freedom. It is not paralysis in the true sense. The ataxic seems to perform all muscular actions better than to co-ordinate them. When lying down or supported he seems to have often as much muscular power as ever he had, yet lacks power to co-ordinate his actions.

It is met with at about the same ages as general paralysis; affects males more frequently than females. Writers regard it also a condition into which some hereditary nervous state has been transformed: *i. e.* hereditary.

It may be distinguished from general paralysis by the walk, writing, and other muscular activity when the eyes are closed. The ataxic cannot turn suddenly around without becoming dizzy, he cannot stand with his feet close together, if his eyes are closed; not so with paralysis.

There may be blindness and deafness complete or partial, with one or both eyes, the same as with paralytics. The sensibility is affected, special and general, destroying what we have referred to as termed by Sir Charles Bell *muscular sense*, with other modifications of sensation. Sight is important to the ataxic: he can co-ordinate muscular action much better when vision is unimpaired; it is necessary for him to keep his eyes fixed in some cases, upon the lower extremities, otherwise he immediately falls. He cannot walk any great distance, cannot walk without the aid of support as a stick, gets easily tired—on the contrary the victim of general paralysis will frequently make long journeys, will endure muscular exertion that is surprising.

There is more disturbance of the functions of the organs within the pelvis in ataxia than with general paralysis, it coming on only in the third period with paralytics. Articulation is not affected, there is not the marked fibrillar contraction of muscles that is observed in general paralysis. Pupils are more generally contracted, one may be larger than the other, although it is not significant of ataxia. There is said to be dilatation of pupils when an attack of pain is experienced, with the ataxic.

A singular and apparently undescribed cause of locomotor ataxia is given by Dr. G. C. Lawrence, in Chicago Med. Examiner, March 15, 1873: *the motion of railroad trains.* He says his attention was first directed to it by the disproportionate and increasing number of railroad men to others, among his patients at the Hot Springs, Arkansas. He is satisfied the occupation holds some close relation to the disease as a cause.

We also noticed one or two other articles calling attention to this fact, stating that memory is first affected, vision and hearing in some cases, and lastly co-ordination of muscular action. The pelvic organs suffer.

We now bring our article to a close; many questions arising

we would be pleased to discuss but cannot for want of space. We hope this review of the subject will excite attention to this form of insanity so common, and induce those who observe cases to make records of all important facts calculated to throw light upon contested points, as the state of the pupil, the form of delirium, &c.

THE INSANITY OF JOHN SAMUEL BLACKBURN.

The evidence in this case, State of Ohio vs. John S. Blackburn, as presented at the trial in November, 1871, (upon an indictment alleging that upon the 20th of March, 1871, he murdered Mary Jane Lovell, by forcing down her wine containing Strychnia): and at the trial, in April, 1874, to determine the question of his sanity, was to the effect that Blackburn was a native of Virginia, in 1871 was 48 years old, was raised a farmer, had been a stock-raiser and trader for eight years. He was always considered a jovial, lively, active business man; elated with success but easily depressed by misfortunes.

About five years before the murder, as Blackburn himself informed me, he began leading an immoral, licentious life with the deceased. He stated to me that previous to this time his sexual passions had given him little trouble—were under his control, but that from this time to 1871, the girl absorbed his whole attention—he was unable to sever his connection with her—that she held him in her power. He stated that about the time of her death, in this respect, he underwent a radical change, suffered loss of sexual appetite, and up to April, 1874, the date of conversation with him, had no return of the passion.

He became changed in character and feeling and business capacity, some months, a year or more, before the date of the

alleged murder; but he says that during the five years preceding March, 1871, or during the existence of his errotic propensity, he "was not the man he was before."

Called on the part of the State, the evidence taken at previous trials having been put in my hands, I visited Chillicothe, April 13, of the present year. I was unacquainted with Blackburn, and from the unsatisfactory nature of the medical evidence, was much prejudiced against the theory of his insanity, believing that if insane he was still responsible, not conceiving it possible that one suffering from Melancholia, or Dementia, as testified by experts, could be so profoundly disordered in mind and so wholly irresponsible, and yet be able to write letters exhibiting no mental defect sixteen days before the alleged murder, the insanity dating back for months. Believing incoherency to be the character if not the essence of demency I could not understand how one so demented could be coherent. With these views and conclusions I visited him in jail, April 13, expecting to find that condition of mental depression peculiar to those who have suffered from dyspeptic troubles, the result of sexual excesses; believing that if any form of insanity existed that the evidence pointed to *general paralysis.*

It seemed singular, however, that if general paralysis was the form of disease that it had not been so declared in evidence, no medical witness having so diagnosed the condition in question.

Blackburn's father died insane, melancholic; previous to his death he had been confined several months in the asylum at Columbus, O. His chief complaint was that he would come to want. Mrs. Margaret Blackburn, his wife and mother of the prisoner, testified:

"We owned the farm we were on, and he bought one just as

he took ill. He used to think he would come to want; that was his constant notion after his mind was affected. He was perplexed about the deed of the second farm he bought, and acted strange about it.

"After his mind got wrong he said: 'Mother, I shall have to kill Henry.' She then sent Henry away for fear, but his father begged to have him back. Henry had cut his name on the fence: 'C. H. Blackburn. Forget me not.' My husband would go out every day and look at the name and cry over it. He used to think everybody ought to be in the asylum but himself, and he always insisted that I was crazy, and that he was not. He was always angry. He would lay down in bed and get up again the next minute. He would cry about his troubles but could never tell what they were. He was in this condition and finally died."

This statement of Mrs. Blackburn, concerning John's father, was fully confirmed by Drs. Wilson and Strain and numerous witnesses.

A sister of the prisoner was insane at the time of the trial, in April, who had an insane daughter. Cases were reported in other branches of the family but not upon direct evidence, these last cases were testified to by physicians who had treated them.

So much for *hereditary influence.* The question then naturally arose with some whether John, knowing the form of insanity of his father, had not tried to imitate it. We will let the evidence answer the question.

The alleged murder was committed the night of March 20, 1871; in July 1870, Dr. Wilson pronounced Blackburn insane and directed his removal to an asylum—without effect. John opposed his removal upon the ground that his father went to an asylum and died. In December of the same year, three months

previous to the death of Miss Lovell, Dr. Strain pronounced Blackburn insane and also advised his removal to an asylum. Mrs. Blackburn testified that during all this period she saw "John was going like his father."

Her evidence was: "John used to complain about his head. *He could not keep still,* but kept walking up and down, and I used to walk with him and try to calm him. He would come sometimes and sit down in a corner and cry. He would talk about his family starving. I told him no; that they were well enough, but he would not be satisfied. Sometimes he would be afraid to go home at night alone. He would take a handful of money out of his pocket and say: 'Look, my family will starve to death with all this money in my pocket.' He would come and bid me 'a long farewell, mother, you will never see me again,' I cannot tell how many times."

Dr. Wilson who had clearer views upon the nature of the case than any witness who testified of it, said upon the stand "John applied to me for advice in July, 1870; he had a sorrowful, dejected look, and told me he had been to Baltimore, the October before (*i. e.* 1869) and was taken sick at the stomach and with a pain in the back and right side of the head; sometimes he said it felt empty, then again as if there was water in it; I found his tongue coated, and *noticed twitching about the muscles of his face;* he seemed to be nervous; he also manifested a *hesitancy* of *speech;* he complained about his mind and said he was afraid he was going to lose it like his father did; I prescribed for him but he would not take the medicine regularly; his tongue was always coated." This evidence was given in November 1871. At the trial in April 1874, Dr. Wilson testified substantially the same. "He said: "Blackburn's disease is general paralysis." When asked to give Blackburn's symptoms he gave them as follows: "Pain in the head, com-

plained that it felt like a block of wood, or as if there was water in it. He has variableness of pupils—the right sometimes the largest, fibrillation of the tongue, tongue drawn to one side; a shuffling, unsteady gait, when he put his foot down it came down with a *thud*, twitching of muscles of the face." He detailed the changes of character, difficulty of speech, melancholy, &c.

Dr. Wilson stated, as did many other witnesses, that Blackburn had the idea he could not buy anything even if he did have money. Blackburn said he "could not buy a loaf of bread if he had a million dollars."

Dr. Johnson stated to me that he met him in Cincinnati, in December, 1870, that Blackburn had plenty of money, but declared he could not buy a ticket to go home. Johnson bought the ticket for him and with difficulty got him on the train. Blackburn believing he had not power to enter the train.

Wilson's description of Blackburn's walk gave a very correct idea of it, "slow, slovenly." He said Blackburn would come down from his house upon the pavement front of it. Wilson lived where he could see him. Blackburn would stand and gaze upward into vacancy, sometimes hang over the horse rack front of the house. Blackburn complained in 1870 of a feeling of expansion, or something within the head was pressing outwards. Wilson was asked what the condition of Blackburn's ears denoted. He replied congestion and a low grade of inflammation of the brain.

Blackburn's ears were swollen, hot, red and very painful. On the 13th I entered his cell with his brother, Major Blackburn. Blood was running from the right ear, and a bloody puriform discharge from the left. The auricle was greatly increased in thickness. John had a sharp pointed oak stick which he run in the ear, and punctured it at a point near where the meatus

and ear are united. This relieved the swelling although several days afterward it was not entirely abated. The end of the nose was also congested. Wilson's idea was that this condition indicated the character of the changes within the head. He said there was "a gradual breaking down and weakening of his mental and physical faculties. I do not think he has capacity enough to reason against his delusion. He could not comprehend."

Blackburn constantly expressed fear of death—that he would never get well.

The evidence of Dr. Strain was: "called on me first in December 1870; complained of his head and right leg; when he put out his tongue it would go to the right side; his secretions were depraved, and his general condition bad; his mental condition was disturbed; he would suddenly break off talking as though he forgot; saw him in latter part of March (1871) and thought him worse physically and mentally; saw him in June and thought him better in body, but worse in mind; regard him as a monomaniac on the subject of want. Could not state the cause of his illness; believed that excessive sexual indulgence had something to do with it." This was Blackburn's opinion also.

Numerous witnesses testified to the change of character—from activity and energy he became apathetic, indifferent, torpid. Incapable of doing anything, he ran around crying, complaining of his head, saying his family would starve.

Two Chillicothe physicians testified to a difference in the size of the pupils, at that time, April, 1874. Dr. Graham, of Cincinnati, testified in November, 1871: "Blackburn's disease is *dementia*, a depression of all the faculties, he is morally insane, has no will to execute what his judgment tells him is right and proper to do, and on account of his mental and physical

condition, is an irresponsible being. Did not test his powers of calculation; did not test his memory or judgment."

Dr. Carson, at this time, said the disease was: *Melancholia*, partial dementia and some paralysis."

The Clinic*, Dec. 30, 1871, contains an article upon the case, by Dr. Carson. He reviews the main medical points. Dr. Carson says the examination made by Drs. Graham, Carey, Culbertson and himself give the following results:

"First, his physical, and second his mental condition. Countenance rather pale—tolerably full. Digestive organs: tongue much furred, and breath sometimes offensive—appetite variable but generally fair; bowels inclined to constipation. Circulation: heart healthy—pulse variable, at one time being 80 in a minute, at another 92, and still more frequent when his sister came in. All these figures were obtained during the same session. It was soft and not full. Lungs healthy—respiration calm—not counted. Nervous system: Size of head measured by its filling a hat of No. 7¼; the cranial developement was good. Facial expression deficient, irregular movement of the two sides of the face; twitching of right side at times; some dropping at times on the right side. Sensibility to pain about the face, good.—Constant reference to pain on right side of the head. Sometimes all over head. Dr. Graham had made examination of Blackburn the day before my arrival, partly with an aesthesiometer and dynamometer, we repeated the examination jointly with the following results: 1st as to special senses; 2d as to general sensibility and motor power.

Hearing: difference of hearing distance being 4 inches less on right side.

Sight: right eye, vision blurred, imperfect at a distance, where

*Cincinnati, O., Edited by James T. Whittaker, M. D.

in left eye it was clear. Sensibility: Dr. G. thought that in his last two examinations instrumentally, there was defective sensibility on right side. My own observations on one of these occasions were not sufficient to convince me entirely on this point. By the dynamometer, the right arm was defective as compared with the left, though he was right-handed, and though his right biceps measured 11½ inches, and his left, only 10½. With neither arm was he able to move the index clear through the scale. With the right arm, the index, at several trials pointed at 63½, or near it; with the left, 68 and 72 were reached. Dr. Waddle, called by the prosecution, tested the electro-contractility of the two sides, and found right side defective. At one time, I observed a general tremor with greater movement on left side. Tongue protruded to the right, always, at our last examinations.

It has varied, sometimes being protruded straight, but with tremulousness.

The temperature was taken on two occasions: the first time before breakfast, it was 98½; the second time it was in the presence of Dr. Graham, and, as copied from his record, made after joint examination, it stood in mouth, by two counts; first, on right side, 101½; second, on left side, 100½. Axillary count; first, on right side, 99¾; second, on left 98½. These latter figures were noted after dinner. We were interupted by the officer calling for the prisoner to conduct him to the Court. Doctors Graham and Culbertson also noted unsteadiness of walk.

The mental phenomena observed were, in general, feeble concentration of attention on any subject, and abrupt transition to other subjects, or sudden silence, while in the midst of a train of thought; hesitancy of speech; sometimes an impeded articulation, though not so marked as the previous fact; memory judged defective by the non-recognition of me after an ab-

sence of a month; and sometimes he would say positively he could not recall certain events which were intimated to him; tests of his business judgment would lead him directly to one of his delusions, of which there were three; first, that his children were starving; he would beg with tears streaming down his cheeks that when we went out, we would give his children a dollar; and he would ask us for some old clothes for them. Any allusion to his family would bring tears in a moment to his eyes, and faltering to his eyes and speech, no matter when attempted. Second; he had the delusion that his money had no purchasing power; that 'he would starve to death with plenty of money in his pockets;' he would contrast his former control of money with his present inability to make use of it; would ask how I bought my watch, or my clothes, intimating no power to provide such things. Third, that his health would never be good again. *One phase of the depressing feeling was, that he had no pulse,* that it had stopped beating, and insisting that it could not be felt."

Carson then considers the influence of the hereditary taint upon Blackburn, as predisposing to insanity: "We have, then, a predisposing cause in the hereditary taint. His age, also, becomes a predisposing cause, because it approaches that of his father's, and because it is a period of degenerative changes.

Exciting causes are conspicuous in the history of the individual. Probable excessive venery,—the maintenance of immoral relations with a woman, under circumstances of probable exposure to his own family and the general public, and failure in business—belong to the recognized exciting causes of insanity."

Blackburn had failed in business previous to this time.

Carson further says: "Next, we have not only the presumption of age as affirmative of degenerative tendencies; but we

have physical signs, as evincing those changes in progress. Impairment of special senses, and of general sensibility on the right side; of motor power in tongue and right arm; irregular movement of facial muscles and unsteadiness of gait; pain in the head, persistent for years; not only pain, but peculiar sensations, of water in the head; of its feeling like a block or log of wood; hesitancy of speech, which seemed more amnesic then ataxic—form a group of symptoms which taken together with the hereditary tendencies, afford a substantial physical basis for mental change."

He then reviews the mental symptoms, and says;

"The theory of insanity, then, has this for its proof:

1st. Hereditary taint, with unquestioned transmission to other members of the family—both this and age being predisposing causes.

2d. Exciting causes, immoral habits, distress in business and consequent unusual nervous tension.

3d. Physical changes in the brain, which under the influence of the predisposing causes, might be considered a basis for mental change.

4th. Consistent physical and mental phenomena of concurrent and cumulative force."

When at Chillicothe I made every possible effort to determine the true nature of this case and to obtain all information that could be gained. The physicians who had observed him for three years informed me that he had a very variable pulse—sometimes as low as 50. The jail physician and sheriff informed me that he was subject to "spells" of excitement. When I first visited him the sheriff informed me: "He is having one of his spells now—is very excited—walks and talks a good deal." I inquired how often he had them. Was informed that at first, when he came to Chillicothe they were frequent,

but that he had had none then for several months. This began on the 10th, they said, it being the 13th when I made the inquiry.

In the last trial, in April 1874, Dr. Strain, who had treated Blackburn in 1870, said upon the stand: "I treated John, beginning in December, 1870. Said he was going to starve to death, and his family. Could not buy them anything if he had money. Complained of a great deal of pain about his head—there was derangement of the secretions. Pulse as low as 40 at one time and as high as 100. Could not sleep—tongue drawn to right side—bowels constipated—weight and fullness at the stomach.

Complained of right leg—was always dragging—would catch on everything he went to step over. Memory impaired. Never drank to excess—would cry when he came to my office, said his family were in want—could not send his children to school for want of clothes—were going all of the time and were well dressed. Cause of disease excessive sexual indulgence."

It may appear to the reader that the evidence of Dr. Wilson and of Mrs. Blackburn conflicts upon one point: he speaks of his torpid, apathetic, stupid condition—the melancholic state, while she mentions that John used to come to her house—would not be still—would keep moving—cried and complained, &c.

By investigating these points when at Chillicothe, talking both with Dr. W. and Mrs. B. I found that both stated only the truth. During the periods of excitement he had been very restless and at once went to his mother's where he would remain for hours—once over night.

The jail physician stated to me that a great portion of the time after Blackburn came into the jail his circulation was very feeble—extremities congested, covered with a cold sticky sweat.

My own examination of Blackburn was to this effect: I visited him twice in jail on April 13th, the last time remaining in

his cell some time. I spent an hour and a half with him on the 14th in the jail, and examined him with reference to his pulse, tongue and pupils several times afterwards.

As I have stated, when reaching Chillicothe I went at once to the jail, with Mr. Mayo, the gentlemanly Prosecutor of Ross county. As I entered the jail my ears were greeted by a mournful voice: "I shall never get well no more mother." "I used to be a good man before I got this disease in my head, didn't I mother?" John and his mother were alone in the cell. He was walking backwards and forwards, tears were running freely. He did not perceive me at first, but on turning to walk towards the door where I stood, observed me. Mr. Mayo was hunting the jailor, to admit me to the cell—during this time through the grating I talked with John, examined his pulse, eyes and tongue. He asked me to examine his ears. Both pupils were contracted until they were very small. The face and head were flushed, hot, while the hands were cold, and purple with congestion.—covered with a cold clammy sweat. The face was congested, indicated a high degree of cephalic congestion. I had observed his walk before he saw me and became satisfied as to its character, for being alone with his mother no motive was afforded to counterfeit any gait unnatural to him. After dark, this was about 4 o'clock, P. M., I returned with his brother to the jail, entered the cell and remained long enough to examine him thoroughly upon all points. He was greatly excited—walked all the time—I could scarcely fix his attention upon any subject. Major Blackburn at last commanded him to be still and directed him to answer such questions as I asked him. For a minute or two this quieted him—but not long. I inquired: "John, when you were taken sick what troubled you first? where did you feel sick?" He replied "in my spine; I believe my spine is melted. Does the spine ever melt, doctor?"

I replied, John it is hardly probable your spine is melted, what makes you think so? He answered "I know it is melted by the way it feels."

He then began to cry—to talk about his family—about his head—asked me if I could give him something to relieve the pain, &c.

I asked him if he ever had cramps in the legs.

"No, but sometimes I draw all over."

"Doctor what makes my teeth grit so?" he asked. I had observed that every few minutes there would be apparently a spasmodic closure of the jaws and grinding of the teeth. The muscles of the face and scalp would contract—sometimes a general tremor as if he had a slight convulsion. He would be talking, this occurring he would make an effort as if to swallow —turn up the face—stop instantly and if he began again it was always upon some other subject.

By the aid of artificial light I examined the pupils; both were contracted more than was natural and more than I saw them at any period afterwards even during daylight. Holding a light close to the eyes the pupils would contract, then dilate, the right remaining the largest. This repeated in the morning of the next day gave not so marked results. Monday evening, the 13th, his walk was more unsteady than at any time afterwards. It was a peculiar, unsteady, shuffling gait—uncertain. At one time he tripped upon the level floor, fell against the wall and if it had not supported him he would have fallen.

The pain complained of in the head was located by him in the left side of the head.

The ears were both swollen, congested and very painful—the right much the worst of the two. Prisoner had in his hand a sharp pointed stick, a few inches long. He stated that he had "opened" his ear with it. Blood running from it I was

unable to determine as to whether there was effusion and that it escaped by the prisoner opening it or not, but concluded, the highly congested condition occurring with the period of excitement, that this determined the condition. The sheriff informed me he first noticed the trouble with the ears on the 10th, the day the period of excitement began. I agree with Dr. Wilson in this, that the erysipelatous condition indicated the character of the cerebral changes—the defective nutrition and changed circulation, that the congestion had modified nutrition and in this respect the condition was valuable as a pathognomic sign.

Drs. Carson and Graham testified that as a sign it had no value—when asked what it indicated, replied: a bad hygienic condition. Dr. Carson said: there is no condition of the ears peculiar to insanity. I believe the ears are sometimes deformed, of the insane. This however is very unsatisfactory as both of these physicians declared Blackburn had improved physically, but not mentally. Those having him under medical supervision testified to his improved physical state. The test with the dynamometer was indicative of returning vigor in the right arm or diminished force in the left, as there was less difference than at previous examinations. The congestive period passed off Monday night, the 13th, few traces remaining upon the 14th. The ears were still swollen and congested when I left Chillicothe, upon the night of the 17th.

The examination of Drs. Carson and Graham was made on the afternoon of the 16th. The voice of the patient was loud, harsh, discordant. His face was expressionless. He stated to me his head had troubled him for several years, that it began about the time he first experienced erotic propensities. I observed him closely during the trial, to determine if possible whether he would manifest any interest in the evidence. When the most important points were being presented he appeared in-

different and as unconcerned as if he was not the defendant. At one time when all were laughing he turned his head to one side, gazed with a quizzical, wondering look, as if to say he knew not what it meant. I went to him once when one important witness was detailing interesting points, addressed him, in order to call off his attention that I might see if he would manifest any impatience. He began at once to complain of his head, asked me if I could cure him and showed no interest whatever in the evidence.

On Tuesday afternoon and Wednesday, 14th and 15th, in the Court room I could detect no difference in the size of the pupils or but slight. They were less contracted than they had been Monday night in the jail. The court room was very light. There was not the mental or muscular agitation after Monday, that was observable that day.

On Tuesday, by an effort, I could cause B. to fix his attention, and at one time he talked very rational for half an hour. He displayed no mental disturbance during this period and made no reference to his delusions, as coming to want, starving, dying, &c.

I tried to determine if possible whether *jealousy* had entered as a constituent in determining a motive for the crime. This had been alleged as a probable cause of the murder. A letter written on March 4th, sixteen days before the death of Miss Lovell apparently indicates such motive. While he talked freely of the girl, during his lucid interval, said she had complete power over him, and detailed his trip the night of the 20th, I could not obtain the least intimation of any jealous feeling. He said the trip of that night seemed like a dream.

The letter referred to is as follows:

"RESPECTED FRIEND:—You will not allow me to call you anything else, will you? Oh, how different we both are to-day

from what we was this day one year ago as I was at your house to pay Huff some money. I have been within nine miles of the Cherokee Indians and God only knows when I may leave, but will be back in some week or ten days and then we will fix all of our troubles up or I hope so.

Now when I come do not do as you have been on some occasions treat me so indifferently but be as good as you once was; take me to your room without me having to ask you and then I will feel towards you. Put a letter in the postoffice for me and I will get it and say where you will be. I am writing part of this on the train and had to back it as I walked along. Now do not fail to be there. I am sorry I am so hurried. I am now in the postoffice and the train is moving. I felt bad last night thinking of you. I am one thousand miles from you but still you are fresh in my mind. Oh come back to me. Now say *yes.*"

We must draw this to a close.

We regard the only condition that includes all the symptoms to be *general paralysis,* of *melancholic* form, and *dementia* the tendency and partial result.

Like multitudes of these cases, after entering upon the first period, or when scarcely emerging from the prodromic period, the disease has been arrested. The "spells" referred to are to my mind *congestive* periods—and John S. Blackburn may suffer a renewal of them at any time, in an intense form, destroying his life. He may *apparently* recover, *but never will.*

The two orders of symptoms, physical and mental, presented by Dr. Carson indicate, if they indicate anything, the early stage of general paralysis. *Melancholy* is only a designation of the predominant form of the mental phenomena—*dementia* only indicates the effects of the disease.

Blackburn's delusions are to some extent variable. He

would be considered by Crozant *now* a victim of ambitious mania. His conversation shows he believes himself the most successful trader, the most active, muscular man alive. He boasted Tuesday morning, 14th April, continually of his ability to out run, out jump or throw down any man. Yet this was always qualified by a mournful look and expression "if I could only get rid of this disease in my head."

A word as to his *responsibility*: as expressed by Dr. Wilson, he has not mental vigor enough to reason against his delusions—he is therefore insane—any act committed in the line of such delusions would not be criminal—but great difficulty would arise in any attempt to determine this fact, for three-fourths, at least, of the time there is such chaos and confusion of mind with him that he himself cannot sufficiently co-ordinate his ideas to enable him to conclude whether any act corresponds to his ideas or not.

It has been said the Ohio Supreme Court holds "knowledge of right and wrong" the test of responsibility. We do not from a careful study of the Ohio Reports, believe this to be true. In the *syllabus* to the Blackburn Case, 23d O. S. R. 146, it is said, and page 165, "the question is (the same as laid down in *Clark's case*, 12 Ohio, 494, foot note) and seems to us to embody the true rule, namely: was the accused a free agent in forming the purpose to kill? Was he at the time capable of judging whether *that act* was right or wrong? And did he know at the time that it was an offense against the laws of God and man?" (Welch J.)

Other cases than the Clark case might be cited where this question of "free will" has been held in Ohio, for to be a "free agent in forming a purpose" is to have freedom of will. The *will* is the supreme executive power of the mind and that power which *purposes*. Hence *intent*, purpose, all the result of *im-*

pulse or *desire*, acting to determine volition, pertains to the will —concerns free agency. All that relates in these indictments to *premeditation*, pertains to the reasoning faculties; intellect. The will may be directed by an impulse and intellect not be involved, as when an act is performed without premeditation, which reduces the grade of the offense, for he who kills in the heat of sudden impulse is not held responsible to the same degree as he who willfully, feloniously and with malice *prepense*, premeditation, commits an offense. Hence metaphysical considerations are the basis of these distinctions. Where there is knowledge of right and wrong but the will is paralyzed, and hence inability to refrain from doing an act, the Ohio Supreme Court holds it to be an irresponsible insane condition. See cases cited foot of page 155, 23 Ohio State Report.

Blackburn was tried as to the question of his sanity, was declared insane, and sent to Athens where he now is, in the Asylum.

The question to be determined at that trial was not the guilt of the defendant as alleged in the indictment, but under the act of March 31, 1874, O. L., whether the defendant had sufficient mental capacity to enable him to conduct a reasonable defense; to determine the question of his sanity at *that* time, April 14, 1874, and not whether sane or insane March 20, 1871, the time of the alleged murder.

He having been declared incompetent to conduct a rational defense and the evidence extending the condition back four years, or 8 months beyond the time of the alleged murder, would any Prosecuting Attorney, if the prisoner did recover, ever be willing to prosecute the case further? We think not. If a prisoner is incapacitated by reason of mental disease from conducting a defense to an indictment, such disease having existed previous to the commission of the crime alleged, will he

be held responsible for the act? Will a man whose brain has undergone the degenerations expressed by the mental and physical phenomena in Blackburn's case, be responsible for *any* act, *civil* or *criminal*—the act the result of delusion or not? We think not—for who can decide whether delusion is a motive to induce the act, when the prisoner can not explain his motives.

CEREBRAL AMAUROSIS

—AND—

ITS CONNECTION WITH DISEASE OF THE KIDNEYS,

—BY—

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The general and indefinite application of the term amaurosis to all cases of loss of vision due to intra-ocular disease, situated posterior to the lens, has been since the able lecture of Von Graefe, published in 1865, in a great measure corrected. There remains however some confusion as to its true definition, owing to the different limits assigned to it by various writers. Among the older authors the term was used indiscriminately to signify partial or total loss of vision from causes not visible to the unaided eye of the oculist, or as it has been facetiously described, "A disease in which neither the patient or the physician could see anything."

The invention of the ophthalmoscope revolutionized this as well as many other false theories in ophthalmology.

The eye specialist who is expert in the use of the ophthalmoscope can now generally localize the seat of the disease.

Recent writers have however differed in regard to the expediency of confining the term amaurosis to the narrow limits

assigned to it by Von Graefe. The latter excludes from the terms amblyopia and amaurosis, all disturbances of sight dependent upon material perceptible changes in the refractive media, in the internal tunics of the eye, on neuro retinitis and embolism of the central artery of the retina. (Wells) Mr. Solberg Wells doubts the propriety of excluding from this group neuro retinitis, as it is generally due to intra cranial disease.

Mr. J. Z. Lawrence in his hand book of Opthalmic Surgery, gives a much wider signification to the term amaurosis. He proposes to divide amaurotic affections into two classes: 1st, Those the cause of which can be diagnosed by the opthalmoscope, and 2d, Those the cause of which can not.

Under the former head he includes changes in the vitreous humor, in the choroid, in the retina and optic papilla. Under the head of changes which cannot be recognized by the opthalmoscope, he mentions paralysis of the retina, loss of blood, pregnancy, epilepsy, hemorrhage, effusions and tumors of the optic nerve, of the orbit and of the path within the cranium. This, it seems to me, slightly undervalues the aid which the opthalmoscope furnishes us as a means of diagnosis.

Stellwag uses amblyopia and amaurosis, to signify those affections which are characterized by certain organic changes in the optic nerve and retina.

Macnamara says we need seldom employ expressions so inconclusive and vague at the present day but be able in almost every case to assign a definite cause for the impairment of vision which our patient may be suffering.* Although we disapprove of the application of amaurosis to most of the intra-ocular diseases in the vague manner of some of the older writers,

*Diseases of the eye—Macnamara, page 459.

we are yet of the opinion that as a general term which long usage compels us to retain, it should have a wider signification than some recent authors are willing to ascribe to it. I think the most convenient and popular definition for amblyopia and amaurosis would be, partial or complete blindness, the result of changes situated primarily either in the retina, optic nerve, or brain. This would include: 1st, All those affections which usually terminate in atrophy of the optic disc and in which the opthalmoscopic symptoms are well marked. 2d, Those which are amenable to treatment.

To the first would be assigned amaurosis, the result of intra cranial affections, optic neuretis, retinitis apoplectica, embolism of the central artery of the retina, etc. To the second, amblyopia the result of the excessive use of tobaccos and alcohol, and amaurosis, the result of suppressed menstruation, pregnancy, hemorrhage, lactation, blood poisoning and mental shock or emotion. In every instance, whenever possible it would be expected that the *special cause for the amaurosis should be stated,* as cerebral amaurosis, tobacco amaurosis, nephritic amaurosis, etc. We now propose to consider that special form of amaurosis the result of cerebral disturbance, and to glance briefly at the influence which the affections of the kidneys may exert upon the brain, causing cerebral amaurosis.

Among the causes which lead to cerebral amaurosis, we may mention meningitis acute and chronic, brain tumors of every kind, hemorrhagic and serous effusions, abscess and senile softening of the brain, spinal disease, blood poisoning, (which will include uremic amaurosis), lead poisoning, opium, alcohol, tobacco and quinine, mental excitement and shock. Among the remote causes may be classed, epilepsy, typhoid and typhus fevers, and in brief, any and all diseases which may produce serious brain disturbance.

The opthalmoscopic symptoms of cerebral amaurosis are optic neuritis and atrophy of the optic nerve.

The opthalmoscopic appearance of optic neuritis, is a swollen and enlarged optic papilla. The retinal veins are usually enlarged and tortuous, the arteries diminished in size, and often hidden by exudation. In the latter stage, the appearance has been well described as woolly. In the commencement however, the changes are not always so well marked, and would be difficult to discern, except by those who have made opthalmoscopy a special study.

"Atrophy of the optic nerve by which it is gradually changed into a chord of cellular tissue, (ligamentous degeneration) is apparently a common cause of extreme amblyopia or complete amaurosis. It appears either as an independent disease, (progressive atrophy) or more often as the last phase of many morbid changes of various seat and character, affecting the globe, the orbit, the meninges, the cerebrum, the cerebellum, the spinal cord, etc.

The characteristic opthalmoscopic appearances are beautifully shown by Leibrech's Atlas, plate xi, Figs. 8, 9, 10. The papilla, at the commencement of the disease, is bright and sharply defined, the scleral margin somewhat broader and clearer than in the normal state, the proper nerve boundary distinct. The ordinary admixture of reddish grey is superseded by a white, sometimes bluish color. The network of the lamina cribrosa, appears thickened; the darker and wrinkled interspace of its meshes gradually disappear, and the whole surface assumes an uniform tendinous lustre, sometimes exhibiting a play of greenish or bluish tints, more often resembling silver or mother of pearl.

2d. The vessels:—With the progress of the disease, the small arterial trunks vanish completely, and the larger become

smaller and paler, and in old cases are converted into fine white lines, without wholly disappearing. The veins undergo the same changes as the arteries, but later in point of time, and even in advanced cases are still visible, although somewhat less clear and less winding than usual." (Zauder)

Von Ammon states that atrophy of the optic nerves depends frequently upon fatty degeneration of the fibrilla and of their neurilema, or upon defective nutrition, caused by compression of the capillaries by exudations within the sheath, or by their impermeability from other pathological conditions. In all stages of the development of the disease, all exudations are formed within the sheath, separating its inner surface from the trunk of the nerve. It is remarkable how much the sheath may be dilated by such effusions and how great may be the disproportion between the actual nerve and its distended covering The latter no longer closely envelop the former, but is widely distant from it, and the ample space between them is filled up by effused fluid. The nerve itself dwindles more and more, and undergoes a great variety of modifications."

Von Ammon does not here mention the fact, that the nerve has two sheaths, an outer and inner sheath. Donders describes the sheath as a "*Double fibrous Sheath,*" an external and thicker one which is continued into the most external part of the sclerotic, and an internal one, which envelopes the trunk as far as the chorioidea, assisting to form the lamina cribrosa. Between the two fibrous sheaths is a network of sharply defined fascicula, which he calls the "*connective tissue sheath.*"*

Dr. Schmidt, of Berlin, has demonstrated by experiment that fluid can be injected from the arachnoid cavity, between the inner and outer sheath of the optic nerve, and so to the lamina

* Translation of Donders upon Refraction and Accommodation of the Eye. Page 375.

cribrosa, so that a direct communication exists, according to this author, between the arachnoid cavity and the network of the lamina cribrosa, by which pressure of fluid may be conveyed and in consequence the head of the nerve suffer strangulation, while the rest of the nerve trunk may be unaffected." (Macnamara).

The opthalmoscopic appearances in commencing atrophy of the optic disc, are not always as distinct as has been described in this paper even in complete blindness. As an evidence of this fact, I have transcribed from my notes the following interesting case, which comes properly under the head of cerebral amaurosis, the result of meningitis.

In July 1869, L. S., a little girl of nine years, was brought by her father to our office for treatment. She was of scrofulous, lymphatic temperament, tonsils large, eyes prominent, head large, features quite handsome and unusually developed for her age. Her manners were composed and collected, and except in stature she had the appearance and air of a young lady of 17 or 18 years. The eyes were bright, of a bluish grey in color and externally presented no evidence of the terrible calamity with which she was afflicted; she was almost totally blind, having only a bare perception of strong light.

History: In February, 1869, she was caught in the rain on her return from school. She was attacked shortly after reaching home with a severe pain in the elbows, this was followed by high fever, pain in the back, shoulders, and back part of the head.

Her father stated that the family physician reported brain fever with marked symptoms of cerebro spinal meningitis. One week from the commencement of the attack, her vision became quite dim; subsequently he consulted an oculist, who made an opthalmoscopic examination but was unable to discover sat-

isfactory evidence of change in the normal aspect of the fundus, to account for the diminution of vision. She was confined to her bed for two months. The sight grew worse rapidly and after convalescence from fever she could not distinguish large objects. An opthalmoscopic examination of her eyes was made by Dr. Taliaferro and myself. The optic disc presented a slightly swollen appearance, and the veins were somewhat enlarged, but with this exception, there were no marked changes in the details of the fundus. She had been placed upon a derivative course of treatment by her previous physicians. We exhausted the usual remedies for such cases, alteratives, tonics of strychnia, iron and quinine, blisters, electricity, etc., "with no avail." She remained under our treatment for a few months, and was then placed in a blind asylum to be educated. During the last summer, 1873, her father brought L. to see me again. He still clung to the hope of restoration to sight. I examined her eyes with the opthalmoscope. Although her vision, a bare perception of strong light, remained the same, a marked change had taken place in the appearance of the fundus during the three or four years. The optic discs were atrophied, and of pale bluish tint. The arteries were exceedingly small, the retina was atrophied and filled with patches of pigment. Her vision is of course forever destroyed.

All the causes of meningitis may be regarded as causes of amaurosis. Thus tuberculosis, scrofula, rheumatism, pyemia, typhus fever, puerperal fever, epilepsy, etc., may each terminate, or give rise to meningitis, which may lead to cerebral amaurosis.

Diseases of the spinal cord, more especially chronic mylitis and locomotor ataxia, may cause amaurosis by progressive atrophy of the optic nerves. In locomotor ataxia, it does not generally make its appearance until a late period of the disease

of the spine, long after the impairment of the mobility and sensibility of the lower limbs and the paralytic affections of the muscles of the eye, the latter being often the first symptom of spinal disease."*

Solberg Wells says the affection of the optic nerves in disease of the spine, is probably due to a lesion of the great sympathetic, through its communication with the anterior roots of the spinal nerves.

Some months since, I was invited by my friend and former pupil, Dr. R., to visit a case, under his treatment for locomotor ataxia. The man had but little vision in either eye. He had also alternate convergent strabismus. An opthalmoscopic examination revealed polar cataract of both eyes. It was possible to see the fundus although its details were not well defined.

I discovered however a bluish optic disc. Atrophy had probably preceded the opacity in the posterior capsule of the lens. This form of opacity frequently accompanies other deep-seated affections of the eye. We are therefore careful to examine for symptoms of other diseases before considering the result of an operation in this form of cataract. We have already stated that, all kinds of brain tumors may produce partial or complete loss of sight, either by direct implication of the optic nerves or by interfering with their proper nutrition by pressure. We are sometimes able to judge of the locality of the brain lesion by a careful examination of the field of vision.

" If the temporal half of each field is impaired, the crossed fasciculi of the nerves are involved, and the seat of the disease is at the commisure, in such cases the impairment of vision is often very rapid, the sight being utterly destroyed in a few days.

The contraction of the visual field begins at the periphery of

* S. Wells.

the temporal side and extends up to or beyond the centre, so that finally only a slight glimmer of light may be left at the nasal side. If, however, the pressure is upon the right optic nerve on the central side of the commisure, the right half of each retina will be impaired, and consequently the left half of each field of vision be wanting. If the compression is situated upon the tract of either nerve after the crossing of the fibers in the commisure, the corresponding eye is affected.

When the right half of each field is wanting, (equilateral hemiopia) the prognosis will be more favorable than when impairment of the temporal half has taken place." (Wells.)

An abscess situated in the tract of either optic nerve, or in the optic thalmus, will have the same effect upon vision as tumors; but in such cases loss of vision may be intermittent, which is not likely to be the case with solid tumors.

In the spring of 1871, I had under my treatment an eminent lawyer, of Cincinnati. Hemiplegia ensued upon a convulsion, apoplectic in character. He complained of loss of vision, a short time after his restoration to consciousness. The paralysis of the extremities was relieved, but slight paralysis of one side of the face continued. His sight was restored upon the abatement of the paralysis, and he read the newspaper without difficulty. From this time until his death he had two or three convulsions at intervals of one or two weeks; each attack was preceded and followed by temporary loss of vision. His pupils, which were ordinarily exceedingly small, were during impairment of vision, irregular and slightly dilated. Sometimes one would be small and the other large and oval in shape. A few days previous to his death, paralysis of the left side became confirmed; his vision, although variable, was much impaired. His condition did not at the time seem favorable for a careful

opthalmoscopic examination. I have however since, greatly regretted that I did not make the attempt.

The autopsy made by Drs. Carson and Dandridge, revealed in addition to other brain lesions a softening of the brain tissue of the right optic thalmus and corpus striatum. The broken down condition of the tissue, presented the appearance of an abscess. In this case, however, I am not prepared to say positively that the temporary loss of sight may not have been due to cerebral hemorrhage. The latter is sometimes the cause of sudden amaurosis, which may be partial and temporary, or complete.

Senile softening, may also cause amaurosis by the extension of the atrophic changes to the optic nerves.

Cerebral amaurosis frequently attends insanity. Dr. Allbut in a paper read before the Royal Med. & Chir. Society, of London, 1868, reports, that in general paralysis of the insane, atrophy of the optic nerves is constantly found and is commonly accompanied by atrophy of the olfactory nerves. It is not distinctly seen until the end of the first stage as it slowly travels from the optic centers and it is in relation with the state of the pupil, which is contracted in the early stages and dilated in the fatty atrophied stage."

Mr. Wells mentions that in idiots, atrophy of the optic nerves is of frequent occurrence. Out of twelve cases it was found of a marked character in five.

MENTAL EMOTIONS.

It has been already stated in this paper that mental emotions when very intense are liable to cause amaurosis.

Dr. Brudenell Carter, F. R. C. S., in his appendix to Zauder's work upon the opthalmoscope, furnishes a striking example of the effect which sudden emotion may exercise upon vision.

"When the 'Turkish Expedition,' under the command of Koord Ahmed Pasha, were taking possession of the Jabel,—a mountain district, to the southwest of Tripoli, Hadj-Goonus, one of the Pasha's agents, was ordered to exact tribute from a certain tribe of Maraboots, whose sole occupation consisted in affording gratuitous hospitality to the wayfarer, and charity to the poor; and who on this score had ever before been exempt from taxation. The Sheik of these good people refused to acknowledge the tax; and pleaded that their revenues being solely disbursed for the benefit of the needy, the property was held sacred, and could not be taxed.

Hadj-Goonus persisted in his demands, got very angry and even threatened to use violence on the sheik if he refused any longer to pay. Upon which the venerable old man rose from his seat out-stretched his arm toward Hadj-Goonus, and while retiring from his presence, spoke these words: 'Since you insist in carrying out your evil designs upon the funds of the poor, may the Almighty curse you with blindness.'

These words were hardly uttered when I observed (for I was present) Hadj-Goonus suddenly place his hand upon his head, and moan aloud from the intense pain he felt there. This was not all, for he had become totally blind."

Mr. Carter also states that he did what he could to relieve his sufferings but to no purpose. He quitted the camp, and I heard that he died a short time afterward at his own home, suffering greatly all the while.

The limits of this paper will not permit me to consider the influence which tobacco and alcohol may exercise upon the brain as a cause of amaurosis. The actual, as well as the seat of the primary impression in Amaurosis from these causes being still matters of dispute. I had some three years since, an interesting case of intermittent glaucoma, in an inveterate smo-

ker of tobacco. Impressed with the views of Wadsworth in regard to the atrophy of the optic nerve, in a review upon tobacco amaurosis, I strongly urged the danger of total loss of vision and prohibited the use of tobacco entirely. The patient accepted my advice and left off the use of the seductive weed. The inflammatory condition quickly subsided and his vision improved so much that I did not insist upon iridectomy. His resolution was however of short date and he again commenced smoking. Ashamed to acknowlege his weakness, he concluded to visit Cleveland for advice. Iridectomy was subsequently performed. His vision was, however, not improved, but continued to grow worse until he became totally blind in the affected eye. I have not had the opportunity of an opthalmoscopic examination since this result, but I have no doubt that there has been atrophy of the optic nerve in his case.

In regard to the prognosis in cerebral amaurosis, we must be guided by the condition of the field of vision, together with a history of all the symptoms which may enable us to determine the character and exact locality of the brain trouble.

If, however, the disease has been slow but persistently progressive, the prognosis is bad.

If with great impairment of sight the opthalmoscope reveals white atrophy of the optic disc, treatment will avail but little if anything; complete amaurosis may be anticipated. It would add unnecessarily to the length of this paper to enter into a history of the treatment which may be beneficial in those cases which are not considered incurable, as this may be obtained from any of our best works upon opthalmology.

THE CONNECTION BETWEEN KIDNEY DISEASE AND CEREBRAL AMAUROSIS.

I may say briefly that in limiting this subject to cerebral amaurosis we must exclude the consideration of retinitis albuminurica (Bright's disease) except in those cases in which brain symptoms may have preceded the loss of vision. Bright's disease may be the cause of meningitis, and thus become a remote cause, through the brain, of amaurosis. In fact all serious affections of the kidneys are more or less attended by brain symptoms and whether these symptoms are the result of pathological changes upon the brain tissue, or the result of blood poisoning, *i. e.*, the retention of urea in the blood and the taxic affect upon the nervous centers. Whenever amaurosis follows such brain disturbance, it should be classed as cerebral. The opthalmoscopic symptoms in the beginning are those of optic neuritis, which may assume the characteristic appearances shown by Leibrich's atlas in retinitis albuminurica or they may be at first of a negative character. The final termination is atrophy of the optic nerves. Partial blindness (Amblyopia) from uremic poisoning may however yield to treatment if the cause can be removed.

SULPHATE QUININE,

—BY—

S. S. GRAY, M. D.,

PIQUA, OHIO.

SULPHATE QUININE,

—BY—

S. S. GRAY, M. D.,

PIQUA, OHIO.

In continuing a report on Sulphate of Quinine, it would be a work of supererogation to go into a detailed history of a remedy that has become almost a household word, among not only practitioners of medicine, but the intelligent of every community, especially in miasmatic regions; neither shall I go into that minutiæ that would be expected if it was some new remedy that had just come forward, claiming to drive veteran remedies from the field.

If I can, by a few practicable hints, widen the field of usefulness of this potent remedy, or increase in the mind of any the spirit of investigation, the effort will not be in vain. As one new invention in mechanics stimulates and sets a thousand minds to work to improve or condemn, so in the science of medicine, the discovery of a new remedy or new principle in an old remedy, may awaken an amount of research that may be the means of much advancement. And when we see the progress that has been made during the last quarter of a century the future looms up in golden harvest, and it is our duty to press forward and investigate.

I know that it is claimed that diseases have changed, and

this is why we must follow a different course of treatment from that which our fathers did.

This may be true to a limited extent from the manner of life of the present day; but while diseases have changed, doctors have not stood still. Yet men sicken and die very much as they did in the days of the fathers of medicine, if left to themselves, and remedies acted much the same then as now.

Shortly after commencing the practice of medicine, I was called to treat a farmer, aged 30 years, suffering from an attack of pneumonia. I put him on the old antiphlogistic treatment, somewhat modified, substituting Norwood's Tinct. of Veratrum Viride for the lancet. The case did not progress satisfactorily to any of the parties concerned. A consultation was had with Dr. J. A. Smith, my old and esteemed preceptor, and for many years an honored member of this Society, who had taken advanced ground in the use of quinine in some cases of fever, to the extent of giving gr. xv at a single dose and lx gr. in 24 hours and curing his patient. He endorsed my treatment, and recommended a continuance; but diagnosed a speedy and fatal termination. Made an appointment for the next morning if the patient was still alive. Seeing my patient a few hours later, the symptoms all more aggravated, I determined to change treatment, and prescribed three or four doses of quinine, taking the precaution to so arrange, that they should all be taken before the time of the morning call. On arrival found patient resting quietly, pulse soft and full, tongue moist, body bathed in a copious, warm perspiration. On retiring for consultation, Dr. Smith says, "Your patient is better. What did you give him last night?" I with some hesitation answered, quinine. He, with a look of astonishment, exclaimed *quinine!* I am surprised that it did not kill him; but he is better and is going to get well. We will say nothing about it

for something might occur and he might die yet, and then you would be charged with killing him."

The patient did not die but made a good and rapid recovery. It was a long time before I ventured to give quinine in pneumonia again, thinking that if this treatment was liable to be denounced as malpractice, that I might have made a mistake, and the recovery of my patient was not due to the course of treatment, but to the *vis a tergo* that so often comes to the aid of the physician. To-day I indorse that treatment as correct, and ask which has changed in the last 18 years, the diseases, or the doctors? For the treatment of pneumonia by quinine. See report on quinine, reported in transactions of this Society for 1873, page 251. Dr. B. F. Kitchen, writes me: "I have been using quinine extensively during the last year in the treatment of pneumonia in children and adults, and in a large practice I have not lost a case. I have used whisky pretty freely in my bad cases, but they might have done as well on large doses of quinine. Am satisfied that quinine in large doses does more to abate disease than anything that I have ever tried. Of course, if it passes into. the expectorant stage, I do not ignore remedies of acknowledged worth."

He also reports me the following case: "Was called in the evening to see Miss R., aged 18; of good constitution. Had been house cleaning; was taken with pain, soreness of throat and hoarseness, with almost incessant cough, eyes suffused and great difficulty in breathing. The messenger said she had croup, and if not soon relieved would choke to death. Had been applying cloths wrung out of hot water to the throat changing them frequently. Saline cathartics had been administered. Added Tinct. Aconite internally, and continued treatment until morning with but little improvement. Then added gr. v of Sulphate Quinine every five hours. Next day patient

much relieved; continued treatment without hot cloths and addition of chlorate potash gargle, to relieve local inflammation. Discharged patient next day. She made a speedy recovery Have always thought that without quinine internally and hot applications externally, my patient would have died."

A daughter of Mrs. A., aged 5 years, had frequent attacks of croup, somewhat complicated with asthma. Would become very hoarse and had great difficulty in breathing. One or two 1-gr. quinine pills generally gave relief in a few hours, in connection with a mild cathartic. They always kept a box of "croup pills" at hand, as they called Tildon & Co.'s 1-gr. quinine sugar-coated pills. In December, 1873, she had an attack that appeared to be more unmanageable than the former ones, and after giving one pill every hour for six hours, the paroxysm would still occasionally recur. I was notified, but by the time I arrived the paroxysm had passed off. I ordered a continuance of the treatment, and at the next recurrence of the paroxysm gave Pul. Ipecacuanha until free emesis was produced. They reported next morning that near midnight they thought she would choke to death, when they gave one of the powders left and in a few minutes she vomited up great quantities of phlegm, and it came up in such chunks she could hardly get it out of her mouth. This almost entirely relieved her. Was up and at her plays next morning, and made a rapid recovery with but this single dose of ipecacuanha. Has had some subsequent attacks, but these have all been relieved by the use of quinine and a mercurial cathartic.

Harvey R., aged 12, of scrofulous diathesis, inherited from his father, who died from consumption,—was emaciated, weak, and had the development of a child of 6 or 8 years. He had the constant care of an affectionate and doting widowed mother over her only child, and was constantly under the care

and advice of a member of the regular profession and a member of this society. He has had frequent attacks of croup which were treated by the usual mode of treatment, relying more especially on *syrupus scillæ compositus*. This always relieved the urgent symptoms, but left him weak and unable to get out of his bed for a day or two. The disease was likely to return on the least exposure, and was frequently followed with lung fever, sore throat or some unpleasant complication. The child had always lived under this treatment. Having an attack on one occasion, when away from home on a visit to some friends, who thought the child too delicate to stand this treatment, they called a Homœopathist and followed his prescription for a few hours and when the paroxysm occurred and the mother supposed her child to be dying, she took the case in her own hands and relieved him with the usual remedy, and with much the former results. Becoming more confirmed than before that the life of her boy consisted in having a supply of *syrupus scillæ compositus* near at hand, in the absence of her family physician, I was applied to for her favorite prescription. I suggested that he might be relieved without it, or at least if my prescription did not relieve, she would still have her former remedy to rely upon, and prescribed gr. iv of quinine, every three hours, until relieved. After the second dose he was so far relieved that but half of the third was given. No other treatment was required. Has had no further use of *syrupus scillæ compositus*, but has always been relieved with the quinine treatment. When I informed her I should report this case, she said, "certainly, everybody should know it; I have often thought I was not half thankful enough for what you have done for my child. I was afraid at first to try any treatment different from that we had used before, he was so delicate, but a friend assured me that it could do him no harm. It relieved him so quick

that I was much surprised, and then it did not make him sick, but built him right up and made him fat and strong till he is like a new boy."

After several years experience in the use of quinine in the treatment of croup, I will give it with as much confidence as I do in intermittents.

Mr. D., aged 54, a farmer, had frequent attacks of hemorrhage of the lungs. Hacking cough; was emaciated; had lost his appetite; was generally prostrated, and was about to abandon his farm. Said he was so weak that he could do nothing. Several of family had died with lung disease. Commenced to take quinine freely, regained his appetite, and with that came strength and general improvement in every respect. Went back to his farming and made his full hand at everything. Was also troubled with constipation which it has relieved. Is perfectly enthusiastic over quinine, taking it for almost everything, and requiring but little other medicine.

Mr. L., aged 30, a farmer for whom I have never prescribed, yet am well acquainted with the case, has had hemorrhage of lungs which at one time was near proving fatal; was emaciated; had pain in lungs; expectorated freely in morning; was compelled to abandon all labor. Says that he has taken cod liver oil and whisky and it did him some good but not half the good that quinine has. Two or three doses will kill the dead, heavy pain in his lungs, and after taking it freely, he does not have to expectorate so much in the morning. His lungs feel free and easy. He says, "It has done me more good than all the other medicine I have ever taken. Am not well yet. Can not do hard labor, but can do any ordinary work." His brother takes it for asthma and gets great relief from it.

A son of Mr. McK., 8 years old has been a great sufferer with asthma; gets great relief from the use of quinine. His parents

always keep quinine pills for him, and he takes them of his own accord, frequently leaving his playmates when he feels a paroxysm approaching, goes to his home, gets his quinine and returns to join in his play.

I do not say these cases, or many others who have been benefited by this course of treatment, have had' tuberculous deposits. But there was in them that which was tending rapidly to a fatal termination, and that has been arrested, for a time at least.

Mrs. P., age 40, emaciated with a distressing cough; cannot eat meats; reports that she has frequently expectorated small, hard, gritty particles, about the size of grains of rice. One year ago was unable to be out of her bed more than one half hour of the day. On a prescription of quinine and iron regained her health so she is now sustaining herself by her labor. For some time she abandoned its use, some person having told her it would get in her bones and make her stiff. She finds by taking two grains on going to bed, she sleeps soundly all night, feels strong in morning, her lungs being free and easy, and by repeating the dose two or three times daily, she does not have to expectorate near the quantity that she does without it.

While I would not expect to cure a case where there were extensive tuberculous deposits, I believe a tonic course of treatment with quinine and iron, for its base, will relieve much suffering and do much good, and give the patient the best chance of recovery. I would not close this paper without stating that while quinine is applicable to a much larger class of cases than was supposed a few years ago, I do not wish to convey the idea that it is to be given indiscriminately and for every disease. A remedy that has such power for good may do much harm if not indicated.

OSTEO SARCOMA

OF THE SUPERIOR MAXILLA,

—BY—

C. S. MUSCROFT, M. D.,

CINCINNATI, O.

OSTEO SARCOMA OF THE SUPERIOR MAXILLA.

Removal of a Large Recurrent Fibroid Tumor from the face, neck and mouth; returning after an operation performed nearly fifteen years previous, for the ex-section of a very large "Osteo Sarcoma" of the right half of the Inferior Maxilla,

—BY—

C. S. MUSCROFT, M. D.,

SURGEON TO THE CINCINNATI HOSPITAL AND SURGEON TO ST. MARY'S HOSPITAL.

To make this case perfectly clear it will be necessary to quote a part of the report of the late Prof. Geo. C. Blackman, copied from the October number of the Cincinnati Lancet and Observer, for the year 1860.

"On the 2d of July 1859, Lemuel Hinedon, a negro aged 30, was admitted into St. John's Hospital, for the removal of the lower jaw, which was affected throughout a considerable extent with the disease known as osteo sarcoma. The magnitude of the tumor caused him to present a frightful aspect. From the history of the case as recorded by Dr. John A. Billings, then resident physician at St. John's Hospital, it appears that nine years before, one of the molar teeth on the right side of the lower jaw became loose, and was somewhat painful. Soon after

he noticed a small tumor on the bone, which, however, gave him no uneasiness. It increased slowly but steadily up to the time of his admission. In some parts the tumor was quite hard, in others it had an elastic feel, imparting even the sensation of indistinct fluctuations. Deglutition and respiration not seriously disturbed, although the power of mastication was nearly lost. On the buccal aspect of the tumor were two small ulcerated patches through which, he stated, from time to time he had lost large quantities of blood. Just previous to his admission his strength had been reduced by an alarming attack of hemorrhage."

(The report goes on to state the patient was operated upon in the presence of many distinguished members of the profession, and that he had nearly died from the loss of blood, but with this exception did remarkably well and had recovered his usual health at the end of two weeks.—M.)

"On the 7th day of August, thirty-six days after the first operation," says Dr. Blackman, "I proceeded to remove the remaining portion of the tumor. (This consisted of the neck of jaw bone, with its condyle, which were healthy, but the ramus with the overlapping structures were so degenerated and blended that it was impossible to distinguish them. The morbid mass extended deeply toward the root of the tongue. After the division of the integuments, the knife was laid aside; and with the bone gouge forceps I succeeded in breaking up the mass completely, and in extirpating too, the articulation. The large mass involving the root of the tongue was raised by an assistant, so that I succeeded with less difficulty than I had anticipated in wrenching out the morbid structure. The hemorrhage was readily controlled by the application of the persulphate of iron, as fast as fresh portions were exposed by the gouge forceps.

Nothing of particular moment occurred during the patient's convalescence, which was rapid. * * * In July

last, a year having passed since he came under our treatment, Lemuel was carefully examined by Dr. Foster and myself, and we could discover no signs of a return of the disease."

I will again have to refer to the original interesting report of the late Prof. G. C. Blackman:

Lemuel Hinedon *alias* Jas. Burns, who states his age to be forty-five years, colored, was admitted into the Cincinnati Hospital, January 29th, 1874, and is the same person operated upon by the late Prof. G. C. Blackman on the 2d of July 1859. He is a man of exceedingly low grade of intelligence, says that the present growth has been coming on a good while. Several physicians living in his neighborhood and knowing him well, say that it has been returning for at least eight or ten years. Although the patient says he is only forty-five years of age, those who have known him from a very distant period estimate his age to be nearer sixty. His hair and beard are quite gray and the radial arteries of both wrists are ossified, and he has well marked senile arcs of both eyes.

On admission the right superior maxillary region was very much enlarged and bulged out, as if by a tumor or expansion within the antrum. This prominence extended from the nose backward, and upward over the front of the malar bone and to the zygomatic arch which was also bulged out by the growth. It was so large as to almost close the right eye, which is affected with cataract and dislocation of the lens. Another part of the same tumor having a hard feel, had taken the place of the right half of the lower jaw and was firmly attached to the buccal aspect of the cheek and the base of the tongue. This last described outgrowth from the base of the tongue had extended its attachment behind the right superior maxilla into the maxillary sphenoid space and the maxillary pterygoid space and was partly attached to the bones at the base of the skull, as well as pressing

upon the right upper portion of the pharynx. It was the pressing forward and upward of this part of the growth which gave the right side of the cheek the appearance of being affected by cystic disease of the antrum. Another portion of the tumor which filled the right side of the mouth, extending forward under the teeth, having the shape of an abrupt cone, the apex of which, pressed upon and protruded the lips giving them a swollen appearance, could be plainly seen when they were open. This portion of the tumor was very red and vascular, bleeding excessively upon the slightest manipulation in examination. On the right side of the cheek, just below and anterior to the parotid region, there was a sugar loaf enlargement, the diameter of whose base was three inches, and whose height from base to apex was two inches, on which was an ulcerated opening. There was another tumor of a similar shape and character under the chin, but much larger and inclining rather more to the right than the left side, the diameter of the base being about 4 inches, and the distance from base to apex not less than two and a half, on which was another ulcerated spot like the former. He says that excessive bleeding will take place from these ulcers, sometimes one and sometimes the other, to such an extent as to produce fainting.

March 1st. The patient has been kept under close observation since his admission into the hospital. The two external tumors have an elastic feel at their apices, and much of the time discharge a sanious kind of fluid, and vary in size considerably from time to time. The one in the mouth disfigures the face very much, and interferes with mastication and articulation, but does not affect respiration or deglutition. I regard these tumors to be of a recurrent fibroid character, or such as have been so described by Sir James Paget in his most valuable work on surgical Pathology, in a recent lecture devoted to recurrent tumors.

When the late Prof. Blackman first operated upon this patient, I regard that he was suffering from the effect of that form of disease at present recognized as cystic disease of the inferior maxilla, and that although the term osteo sarcoma was used to define the disease by him, I entirely agree with Mr. Paget, who says: "Under the vague name of osteo sarcoma, many include together and seem to identify, all growths in which bone is mingled with softer tissues. I also regard that in connection with the cystic disease of the bone at the time of the first operation there existed the commencement of the recurrent fibroid disease. For Prof. B. has already stated that when he removed the remainder of the tumor, on the 7th day of August, "the morbid mass extended deeply toward the root of the tongue, and that the large mass involving the root of the tongue was raised by an assistant, so that I succeeded with less difficulty than I had anticipated in wrenching out the entire morbid structure." This "morbid mass" at the root of the tongue was undoubtedly a recurrent fibroid degeneration which had continued to grow, (although slowly at first,) up to the time it was removed by myself, and as will readily be seen from the condition of the patient at the time of the operation, the growth was invading all parts of the right side of the face, even beyond the chin, as well as more than filling the right side of the mouth and extending behind the superior maxilla and even, as before stated, encroaching upon the base of the skull.

This patient was in the hospital about five weeks before he was operated upon. My reasons for having him under observation so long were these: First, he was brought from one of the suburbs near the river where he had the benefit of good country air, and I deemed it necessary to acclimate him to the hospital and prepare him for the operation. Second, it gave me an opportunity of studying the case carefully and showing

it to all of my surgical friends and others, as well as to learn their views as to the propriety of operating, none of whom indorsed such proceeding, at least if they did I am not aware they so expressed themselves. One only, said *if* he was going to operate on the case he would first tie the common carotid artery of the diseased side.

On introducing the patient, the remarks made, as to the propriety of ligating the common carotid artery as a precautionary measure, were considered. This seems to have been a favorite plan of the late distinguished American surgeon Valentine Mott. But I believe the weight of recent authority is on the other side. It having been shown, there has followed nearly as great mortality after ligating the vessel as a precautionary proceeding, as has resulted from many of the most extensive surgical operations for removing formidable tumors connected with the neck, face and mouth. For a concise statement upon this point, the statistics collected by Dr. Norris and published in the *American Journal of Medical Sciences*, for July 1847, show the serious character of the operation of ligating the primitive carotid artery; for of one hundred and forty-nine cases, thirty-two were fatal from hemorrhage, cerebral or pulmonary disease. "Here then," says Blackman in his reported case, "we have one death in four and seven-tenths cases, from an operation recommended to us by the very highest authority, as a *precautionary* step in the removal of tumors of the lower jaw. The mortality is about equal to that from the latter operation itself—one in four—of one hundred and sixty cases collected by Velpeau.

For further statistics upon the subject of ligating the large arteries, see Blackman's edition of Velpeau's Operative Surgery, 2d Vol.

I would not like to be understood to say, there are no cases of surgical diseases connected with the parts above alluded to,

in which the ligation of the primitive carotid would be improper, yet they are not common. *In this case I decided not to use the ligature.*

The operation was done on the 5th day of March, in presence of the hospital staff, most of the leading surgeons of the city, and others from a distance, as well as a large number of medical students, who were attending the different colleges.

The patient being brought under the anæsthetic influence of chloroform by Dr. Wm. Carson a member of the staff, who kindly consented to administer it, the operation was commenced by making an incision immediately below the zygomatic process of the temporal bone, in front of the ear and carried downward and forward to the right commissure of the lips. The flaps were then freely dissected up, and the outside of the tumor exposed, the morbid growth having thoroughly infiltrated itself into the surrounding substances of the cheek. The tumor within the mouth and behind the superior maxilla was more than large enough to fill the outspread hand, by which I tried to wrench it out, but not being able to accomplish this, and fearing I could not control the hemorrhage should I dissect, it was then attacked with the bone gouge forceps and rapidly torn from its attachments behind the jaw. This was the work of less than a minute, so rapidly had I to use the instrument, and yet the patient lost more blood than I have ever seen flow in the same length of time. A friend who was present, said the torrent was sufficient to run a mill wheel. For its arrest I had prepared about a dozen pieces of fine sponge, each a little larger than a hen's egg, well saturated with a solution of Monsell's persulphate of iron; these were rapidly forced into the cavity made by the instrument so as thoroughly to compress the bleeding vessels and to close up their mouths by the coagulating influence of the styptic; another and very beneficial effect

of the application of large quantities of the solutions of the persulphate or the perchloride of iron is also to freely cauterize and char the raw surface made by the tearing away of the morbid growth, and in this manner closing for a considerable distance the otherwise open vessels, and it is from this effect we get so much benefit. No vessels were tied in the operation, nor was there ever the slightest bleeding afterward. The wound was left open until the afternoon. Upon attempting to close it, I had the greatest possible difficulty in doing so, as the edges made by the first incision were so infiltrated with bony matter that it required much force and caution to pass the needles through them. I first tried to bring the parts together with strong, steel *accipressure* pins, but in no instance could I get them to penetrate, every one breaking before they would pass through.

After removing the tumor from the inside of the mouth, it was found to contain a considerable quantity of thick, dark glary fluid which was incysted. Part of it also consisted of bone. The loss of blood was so great that any further attempt to remove the other tumors occupying the side of the face and chin was abandoned for the time being; but this was all I expected to accomplish at this proceeding, and I was very glad to see the patient, who had fainted, recover from the effects of the shock produced.

As to the propriety of removing large tumors of this nature at different times, we have the best authority, as well as the dictation of sound judgment, and I agree perfectly with the doctrine laid down by Blackman, Deiffenbach, and others. As the former, in the report of his case, says: "The difficulties encountered in some of these tumors must deter any prudent surgeon from the attempt to complete the task at a single operation."

The patient continued to do well after the operation; the in-

cision in the face was healed except near the angle of the mouth, but as the healing process went on, the bony tissue in the parts became absorbed and they resumed their natural soft consistence. He suffered but little inconvenience from the effects of the operation, so that on the 15th day of April, the second was performed.

The second operation of myself, and the fifth to which the patient had been subjected, was like the last, done in presence of the hospital staff and many members of the profession. Chloroform again having been administered, an incision was made on the right side of the face, commencing at the posterior part of the tumor near the corresponding angle of the jaw, and extending in a curved line round the lower part of the cheek through the base of the second tumor beyond the median line on the left. The integument was then dissected up from the tumors and the principal parts of them removed by the knife, but there was a large process connected to the root of the tongue, which I deemed best to tear away with the bone gouge forceps. The hemorrhage in this operation was not at all profuse, it being expedient to tie but two small arteries, and one of these to the left of the median line. The bleeding from the base of the tongue was arrested by the use of the solution of the persulphate of iron applied on sponges. In removing the part of the tumor connected with the remaining left half of the inferior maxilla, the broken end of the bone remained precisely in the condition it was left after the first operation of Prof. Blackman, the detached portion having been removed at that time by the strong bone gouge forceps, or nippers, and not sawn off.

Both of the tumors removed at this operation were cystic in character, and like the last one, contained a thick, dark, glary fluid. The base of each was fibrous in consistence, and the

same form of degenerated tissue extended from a short distance in front of the ear of the right side, occupying all of the same side of the face as low down as the neck and extending under the chin beyond the median line.

A few days after the operation, a large part of the lower flap sloughed and came away, the parts previously having been brought together by the interrupted suture. After this the patient did well, but from the loss of tissue a plastic operation had to be performed to close the very large open space that had been left. This succeeded only in part, and had to be again repeated in the course of two weeks, and when it was nearly healed, and the patient about be discharged, he was suddenly attacked with phlegmonous erysipelas of the face, the seizure being the most severe and sudden I recollect ever to have seen. He was visited regularly every day, and I was rejoicing in the triumph achieved, to have gotten my patient through four such terrible ordeals, when to my astonishment, after leaving him at my last visit cheerful and happy, I found him with swelling of the upper part of the right side of the face and a pulse beating at the rate of one hundred and forty to the minute and an accompanying heat of surface of one hundred and six and a half degrees of Fahrenheit's thermometer, the other symptoms being quite as unfavorable. The disease however subsided and he was able to leave the hospital on the 20th day of May, still with the upper part of the right side of the face swollen. There was accompanying this attack of erysipelas from its first onset, a considerable enlargement of the cervical gland behind and under the right ear which never subsided, although the lower part of the face had nearly returned to its natural condition except the great loss of tissue. Since the patient left the hospital I have seen him several times, at each of which the swelling of the face was increasing, as also the glands of the neck

before mentioned, and the corresponding gland of the opposite side, as well as others, have become affected; his general health does not decline, but the primitive disease is undoubtedly spreading and returning with greater violence than it has yet done. At the time the patient left the hospital, the wounds from the different operations had entirely healed except a small space at the root of the tongue which remained open to the extent of less than an inch in diameter, and this was healing kindly. There is thus far no tendency for the disease to return at the root of the tongue, the point at which I believe it to have first commenced.

I learned from the very intelligent family with whom the patient lives, that Dr. Blackman performed an operation on this patient about eight years ago, and he then said it would be impossible for him to submit to another. So that there is strong testimony in favor of these tumors having made considerable progress. At that time, as to any history that could be gathered from the patient himself, it would be entirely unreliable.

I hope I may not be considered prosy in taking up so much of the time in reporting this case, but to me it is of so great interest in all its features, especially the pathology, that I have appended a few paragraphs from that great master, James Paget, who I regard, has so excellently described and properly named this disease.

Speaking of these tumors he says: "Almost every form of tumor may occasionally present examples of recurrence, so that the distinguishing term I have employed must be understood to expresss, not the possession of any specific form of structure, but rather a peculiar tendency manifested in the life of the tumor. For it may be accepted as a well-established fact, both in physiology and pathology, that similarity of structure between two or more different parts is not of itself sufficient to deter-

mine functional correspondence. The examination, therefore, of any texture either morbid or healthy cannot be regarded as complete if it is limited to a mere determination of its form, appearance and structure. Its growth, development, tendencies, influences upon the individual upon whom it occurs, in short, its life, must be attended to. Its teleological as well as its morphological aspects are to be considered."

He says also, "the form of tumor in which this property of recurrence is most strongly exemplified, is one which in its structure most nearly resembles the common fibrous tumors, and for it I have proposed the name of 'Recurrent Fibroid Tumor.'"

I hope I will be pardoned for quoting one or two more paragraphs from this very distinguished author, as the description given by him, of the recurrent fibroid tumor, is to my mind the description of the character of tumor with which I have had to encounter.

Mr. Paget says further: "Although the various instances of recurrent tumors recorded, present many diversities of structure, yet they may be said generally to have possessed the character of incomplete development, and to have approximated to the embryonic or rudimental, rather than the perfect state of natural tissues. And this rule of persistent or arrested embryonic structure in the recurrent tumors is so general that in practice it is advisable to speak with hesitation of the ultimate result in any case in which a tumor is found to be composed of rudimental tissues. This similarity in structure to embryonic texture becomes more strongly marked after each removal and recurrence. So that a tumor, which at first, might be not unlike the normal fibrous or glandular texture in which it grew, after repeated removal and recurrence becomes softer, more succulent, and in its later growths may seem to the naked eye little more than like masses of yellow or ruddy, soft gelatine, with blood

nect them on the one hand with the innocent and on the other with the malignant tumors."

In Bilroth's Surgical Pathology, he devotes a few pages to a disease called by the name of Adeno-Sarcoma. The disease there described certainly has many features in common with the case under consideration, and is probably the same. The following microscopic examinations kindly furnished me of these tumors, by Dr. N. P. Dandridge and by J. C. Mackenzie, the pathologists of the Cincinnati Hospital Staff, I think coincide with those of Theodore Bilroth.

Dr. Dandridge says, "the tumor presents great variety of structure in different parts. From the mass occupying the superior maxilla and removed at the first operation, the section exhibits a fibrous tissue, infiltrated in parts by cellular elements. In places there is a more or less regular alveolar arrangement, the alveoli differing greatly in size, and so closely packed with cells as to make it difficult to clearly trace their outline and shape. Again their is regular gland-like structure, as though the sections were through acinous gland, displaying round or slit-like openings as the ducts were cut at right angles or obliquely. These openings were lined by a single layer of columnar epithelium. At another part there was a papillary arrangement, the papillæ were covered with columnar epithelium and projected into a spindle-celled, and fibrous tissue. This variety of structure was not seen in any one specimen, but was only found after studying a large number of sections. The mass removed from the chin seemed principally composed of a simple very loose-meshed connective tissue, though here and there a slight infiltration of cells was seen."

Dr. Dandridge was present and assisted me in three of the first operations.

Dr. J. C. Mackenzie, makes the following brief statement:

vessels. The later are usually much more rapid in their progress than the earlier growths; they are generally less well defined, penetrating further and more vaguely among interstices of adjacent parts, and more quickly protruding through the skin or scars over them.

And in these characters the later formed tumors assume more of the character of malignancy than the earlier. The author quoting Mr. Syme, "who also expresses a similar transition; describing, as the usual course of the cases he has seen, that after one or two recurrences of the tumor, the next new productions present a degeneration of character, excite pain, proceed to fungous ulceration, and thus in the end prove fatal." So that, although there be cases in which the evil career has not been run, yet I think we may regard these tumors as approximating to characters of malignancy, not only in their proneness to recurrence after removal, but in their aptness to assume more malignant features the more often they recur." * * * * * * *

"But the evil result does not by any means follow as a necessary consequence of repeated recurrence of the tumor, for there are many cases now recorded in which the patient retains to all appearances, perfectly good health, and shows none of the cachexia which would almost certainly exist in a patient who had suffered repeated recurrences of cancer. * * *

The recurrence of these tumors takes place, not merely in the same organ or tissue, but *in loco*—in the place in which they originally occurred—in the cicatrix or closely adjacent to the scar of the first operation wound. And here again do they possess a character by which they are distinguished from the malignant tumors, which in their recurrence may multiply not only in the same part but in distant organs. * * * * *

Thus we have in these recurrent tumors, characters which con-

"The tumor presents a very composite aspect. Tubes lined with columnar epithelium, are mingled with tissue containing spindle-shaped cells in abundance, and in some places there are alveolar spaces filled with large granular cells."

July 14th. I have been kindly permitted by the Secretary of the Society to withhold this paper to date, so that I can state the condition of the patient, and to what extent there has been renewal of the primary disease. I find him in good general health, but the swelling of the glands on both sides of the neck is increasing, the one on the right side has a small sloughing ulcer upon it. There are also two small openings having the appearance of abscesses, one on the side of the forehead, and the other over the zygoma, each of which secretes a purulent discharge; the whole of the right side of the face and forehead are very much swollen. The small open space before mentioned which corresponds to the root of the tongue is not yet healed, but is dry and cicatrizing. There is no return of the disease at either place which was the seat of my operations. The disease is now assuming the character of malignancy, which it has never done before.

It has been a source of great satisfaction and instruction to me to have been able to follow up this case for so long a time—over fifteen years—I was present and assisted in the removal of the first tumor, July 2d, 1859.

USE OF ERGOT

—IN—

PUERPERAL CONVULSIONS,

—BY—

D. J. SNYDER, M. D.,

SCIO, OHIO.

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It is not my design to enter into a lengthy discussion on the use of ergot in controlling puerperal convulsions, nor to form hasty conclusions on the manner in which its action is exerted upon the nervous system, as I have not had sufficient opportunity to study its *modus operandi.* That it possesses a controlling influence in puerperal eclampsia I have not the least doubt, and in my opinion, a therapeutic agent is within the reach of every one, which will rob the bedside of one of the most terrible and heartrending spectacles that has come under the observation of physician or friends,—a woman with puerperal convulsions.

I have had the opportunity of observing it in two violent, and one threatened case, and its results were so satisfactory that I would not hesitate to prescribe it in all cases with a view to hasten parturition or to produce uterine contraction.

CASE I.

Mrs. M——, aged 30, the mother of four children, of a nervous temperament, and being seven months pregnant, was suddenly attacked with convulsions on the 10th day of June, 1871.

A neighboring physician was immediately called, and as soon as possible, 10 ounces of blood was taken from the arm. In four hours, 8 ounces more was taken. During this time, she had spasms every 30 minutes. Pulse 110, hard and full. Condition of the os rigid with no prospects of dilatation. At 12.00 M., my partner, Dr. W. W. Custer, arrived and immediately applied cups to the spine from the cervical to the dorsal region, and drew 10 ounces of blood.

Patient still unconscious at 4:00 A. M. Pulse hard and full. Had six spasms since 12:00 midnight. Os very rigid. At 6:00 A. M. no change. Had three paroxysms in two hours.

I arrived at 7:00 A. M., and upon consultation, we agreed that the only hope for the life of the patient was delivery if possible. Os hard—no dilatation. Pulse same as before. With a view to excite uterine contraction, we administered 60 grains ergot in decoction by enema.

Ten minutes after she was seized with a terrible convulsion and her life was despaired of. In forty minutes after the administration of the ergot, what was our surprise to find the patient completely relaxed and semi-conscious. Pulse 90, soft and compressible. Shortly after she went to sleep and slept for several hours. She had no more paroxysms, and in two months gave birth to a very healthy boy.

CASE II.

Mrs. A——, aged 40, the mother of eight children, and seven months pregnant.

On the 15th day of August, 1872, I was called to see her, and found her in the following condition:—Severe pain in the gastric region,—pulse 90, hard and full. Anxious and troubled. Expression of countenance showing that she felt something terrible must happen. Occasionally a nervous twitching of the muscles in her extremities would occur. Had slight hemorrhage. Examination revealed a rigid os. With a view to arrest the uterine hemorrhage, I gave her 30 grains ergot. In one hour after all the symptoms enumerated had disappeared, and at full time she gave birth to a healthy child.

CASE III.

Mrs. S——, aged 25, primipera, seven months pregnant. This case was the same as No. 1. With the exception of cups along the spine, bleeding was omitted. After ergot was administered, patient had no paroxysms, but recovered rapidly, and at full time, gave birth to a healthy child.

What is the therapeutic effect of ergot in these cases? Does it exert a special influence upon the spinal cord relieving it of its congested state, or does it excite uterine contraction and thereby relieve the hyperasthesia of the nervous system? Or if puerperal convulsions are caused by uremia, in what manner does it act as an antedote to the poison?

REPORT

ON

STATE MEDICINE AND PUBLIC HYGIENE,

BY

W. W. JONES, M. D.,

TOLEDO, OHIO.

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MR. PRESIDENT AND GENTLEMEN:

In reading over the reports of the various Medical Societies of the country, one cannot but be impressed with the conservative views entertained by many of the leading minds of our profession, upon the subject of State Medicine and public hygiene. In the report made to this Society last year, the author while (deprecating the fact), gives his opinion that our form of government, and the characteristics of our people are such as to retard desirable progress upon this subject. Another element of this conservatism is found in the dislike (common among the members of the profession), to associate medical truth with the partizan politics of the country, and a fear that governmental co-operation would, through this influence, result in failure to advance the true interests of science.

However much we may be influenced by these considerations, we should not forget the true mission of our profession, viz: to prevent as well as cure disease; and that although impediments to progress of this kind may exist in the very nature of our institutions and form of government, yet the direct stimulus to

intellectual activity which is promoted by that form of government, will also tend to a higher appreciation among the masses of the benefits to be derived from such action, and encourage greater progress in those investigations which shall lead to lasting benefits to humanity.

It is not the intention of the author in this paper to enter into a detail of the practical workings of a State Board of Health, preventive medicine, or statutory enactments incident to State medicine, but simply to set forth some of the advantages which may be derived from proper State and national organization.

This subject will ever expand as we go onward, which will be only step by step, and we can hope to reap only a partial harvest from the seed which we sow. "Life is short, Art is long." Short belongs to us, long applies to State Medicine and public Hygiene.

If we define State Medicine and public Hygiene to be "the protection of the public from the causes of disease by the enactment and enforcing of sanitary laws," we shall only partially lay the basis for that broad field of investigation and research which comprehends not only the different departments of medical science, but is intimately connected with the various elements of the physical world around us.

Our profession have been for many years educating the people to the necessity for greater knowledge of the causes of disease in order that they may be avoided. In most of our cities Boards of Health have been organized; and in some few of the States, State Boards of Health have been created. These institutions have paved the way for the application of the knowledge of the causes of disease, so as to materially curtail the death rate in all the great cities. Unfortunately the United States census presents no statistics upon which to base the statement (which accords with my observations) that the mortality

in the rural districts of this country has kept stationary within the past two decades, while decided progress has been made in cities toward prolonging life.

The necessity of proper sewerage and disinfection is well understood, and this problem may be said to have been worked out, so far as it relates to cities. Although much has been learned concerning the necessity and best means of ventilation, much remains unlearned. Wherever boards of health in cities have found causes of disease existing, they have zealously gone to work to remove them, resorting to compulsory action when clothed by law with the power to do so; and it is to their efforts mainly, that compulsory vaccination (so necessary to the protection of communities) has been anywhere enforced.

There are many causes of disease that seem to elude individual effort to trace them out and mortuary statistics only give the range of their fatality without drawing aside the veil which enshrouds the hidden cause which produces them. Among these may be mentioned epidemic and endemic diseases. The natural history of the former, although they constitute the scourges of mankind, has scarcely yet been written, much less have their causes been traced. Among the latter, remittent and intermittent fever, from its prevalence, demands that we should no longer grope with that *ignis fatuus* malaria, which has been ever present and never found.

Many of these causes can only be eliminated by such combination as can be afforded by the State through its public boards of health. A prominent member of this society in 1867 obtained one of the prizes before the American Medical Association for an essay upon the subject of the "causes of remittent and intermittent fever," basing his proofs upon the facts derived from army statistics and his own personal observations. Ever since that time I have attributed my own exemption from that

disease to the hints contained in that paper, and a short time since I was reminded of the truths set forth in that essay, on meeting with a physician who commenced practice in this valley in 1816. A young physician to whom I introduced him remarked, "how is it, Doctor that you preserved your health and longevity so long in the Maumee Valley?" "Oh," said he, "the story is very simple, it was a flannel shirt." Not having read Dr. Black's paper, the young doctor could not properly appreciate that the old gentlemen had acquired immunity from ague by protecting his person from the effects of extreme thermometric oscillation.

Our profession have always exerted themselves to aid in tracing out the causes of disease, and we may confidently say that the physician, if provided with blanks by a health officer, with a request to note down his cases of any particular disease, with time, place, and any other desirable particulars concerning them, to be tabulated with others in the same locality, would willingly record his observations; and we would soon obtain a mass of facts leading to the discovery of the causes of disease, which will enable humanity to avoid them. The mortuary statistics accumulated by boards of health have their value, but a far greater one may be realized by the combined observations of cases of disease at given times and places.

It has become an established truism, that the average civilization of a people may be estimated according to the capacity of its public men, and the character of the laws which are enacted and enforced, and that laws made in advance of public sentiment (in a free country like ours) are only feebly enforced, or not enforced at all. So with sanitary laws; without the necessary knowledge on the part of the people to appreciate them, they would remain a dead letter upon the statute books. But this condition of society only exists to a limited extent in this

country. The people of our cities have learned the value of their health organizations, and willingly encourage, and confer extraordinary power upon them, when necessary to make them efficient. So tenacious have they become in the removal of nuisances which are calculated to produce disease, as in some instances to outstrip the health organizations by summary action. A noted instance of riot occurred in this city, a short time since, because of a difference of opinion existing between the people of one of the Wards and the Board of Health, upon the propriety of draining a pond of standing water in midsummer. Under such circumstance, as might be expected, the people had their way, and the Board was compelled to cover the exposed surface with earth to prevent a greater calamity befalling them.

It has taken but little time to demonstrate that tecnological schools have returned, by the discoveries made by their alumni in the arts, and their application to the various industries of the country, a hundred fold to the wealth of the State as compared with what has been expended in their support. If we reckon human life and human happiness (which can only be attained through health) as having a fixed value in dollars and cents, it will be easy to demonstrate from statistical records the increase of longevity, as well as the greater immunity from disease, which will result from the enforcement of sanitary laws.

The wide-spread influences which constitute the causes of disease, render the action of local boards of health, acting independently of each other, of but trifling account, in comparison to what they may become, when connected with a State and National bureau, where observations recorded over large areas could be compared and summed up. This may be aptly compared to the value of the U. S. meteorological reports over the country without "Old Probabilities" in Washington to tabulate and figure out the storms.

At the recent meeting of the American Medical Association in Detroit, the reports received from nearly every State in the Union urged the necessity for State action, in the establishment of local and State boards of health, while a respectable minority opposed a National board until they had become more generally organized in the States.

The results obtained by the States that had established them, as evidenced by the reports to this association, were highly gratifying and satisfactory, though none had been in operation more than five or six years, and a majority only one or two, yet progress had been made commensurate with the important interests involved in the life and health of the people.

In most of the States where these boards have been established, they consist of a number of members, and are vested with power to summarily abate nuisances and suppress any business unless it be carried on so as not to be destructive of life or health.

In this State these powers are conferred by statute upon local boards for cities and towns to be exercised at their discretion, according to the exigencies which may arise. This is as it should be, for it cannot be expected that a State board will be ubiquitous or accomplish more than general results, without making themselves amenable to the charge of meddlesomeness, and perhaps doing injury to the cause in which they are engaged.

All that is desirable to be accomplished in this State would be the establishment of a Sanitary Bureau, at the head of which should be a competent officer, to whom all local boards of health should report, and the power to organize local boards of health should be extended to county and township organizations.

The study of sanitary science has become one of the necessities of modern civilization; and if it is a necessary element of

culture for the few, and of safety and happiness for the many, why not open wide the doors to this avenue along which comes happiness for the great mass of the people, rich and poor alike; by enforcing its study as one of the necessary branches to be taught in the public school. The child will learn it as easily as the lessons of grammar and arithmetic. If it be said there are no text books, we may reply that text books will follow the demand as surely as corn finds its way to a famished, stricken people.

By no other means can we as certainly benefit our race, forward the interest of humanity, and discourage quackery in its many protean forms, as by the proper education of the youth in sanitary science. Viewing it in this light, this subject becomes a part of State Medicine. I know of no reforms better calculated to do good, than that which will tend to teach mankind how to avoid the causes of disease and death. To our profession is committed the learning and habits of thought, which can best appreciate and teach the people the necessity for this knowledge. Connected as we are through all the ramifications of society, with the social life of the people; in no better manner can we testify to the unselfish devotion which characterizes the true physician, than by extending our aid toward those movements which shall permanently benefit *all humanity*, and which constitute at once the essence of true patriotism, without expectation of recompense more than having contributed to the welfare of the State.

Another means of popularizing and elucidating this subject will be found in organizing local public health associations, for the discussion and dissemination of information upon the subject of individual and public health, which may be made auxiliary to State and national societies.

The importance of this, as one of the great elements in the

progress of social science, needs only to be considered in its bearings upon the welfare of the race to be duly appreciated. To you gentlemen who are every day familiar with the influence which poor health and disease exercise not only upon the happiness, but the judgment of moral and intellectual subjects, it is unnecessary to say more.

The advanced minds of the State have long since appreciated the need of a State organization or bureau of health; and the people will now gladly hail any efforts on the part of our legislators to establish and maintain any organization which is calculated to promote the health and longevity of the inhabitants of Ohio.

The legislator who objects to it on account of its cost, places the life of his constituent in the balance to be weighed with money. The statesman who cannot appreciate its necessity, hardly comes up to the average civilization which characterizes the people of our State.

REPORT

OF THE

SPECIAL COMMITTEE

UPON

A State Inebriate Asylum.

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A State Inebriate Asylum.

At the last meeting of the State Medical Society, a special committee were appointed to report, at this session, upon the practicability of petitioning the Legislature to establish a State Inebriate Asylum.

A few weeks since I received a communication from, and have since had a short interview with, Dr. W. W. Jones, who is one of the committee. Dr. Jones did not think the present period opportune for legislation. The opinion of the other members of your committee has not been received. For many years it has been my opinion that our State Legislature should make a moderate appropriation for the benefit of inebriates. This was recommended by Hon. S. P. Chase, when Governor, and at different periods since, some of our philanthropic legislators have had their sympathies enlisted. The great barrier appears to be the want of full credence to the fact that the inebriate is insane; in other words, that there is such a form of insanity as Dipsomania, that the will power is so perverted that the confirmed inebriate has not the power to resist his inclination for alcoholic drinks. Sufficient has been written and said,

in our State Society, to authorize me to assume this to be in accordance with the belief of the Profession. The policy of the State should be to appropriate a moderate sum—say—one hundred thousand dollars for the purchase of two small tracts of land of twenty-five acres each,—erect cheap buildings that would, at first, accommodate twenty-five inmates, remote, two or three miles from any village where alcoholic beverages could be obtained. That one of these small institutions should be for such persons as would voluntarily sign a pledge that they would conform to the rules and regulations of the institution; that they would remain at least six months; that, if able, they or their friends would pay two dollars per day in advance for board and necessary attention; that they would not leave the premises except with the Superintendent; that their time should be employed in amusements, reading, labor in garden, or beautifying the grounds. The other institution should be for that class of inebriates, who are reckless and confirmed dipsomaniacs, whose pledge to abstinence could not be taken with a fair prospect that it would be adhered to. For this class the rules should be more rigid, and for admission the same preliminaries as for our Insane Asylums might be insisted upon. This class, if able, or their friends for them, should pay three dollars per week. In either of these State institutions, if the inmates are poor, the State should pay the expense. It has been my conviction for a long period, that too much money has been expended on our State Institutions for the insane, and that a greater benefit would result, if such large numbers were not congregated together. That a larger number of permanent recoveries would occur with dipsomaniacs, than with those arising from other varied causes of insanity, is my firm belief.

No more restrictions than are found to be necessary to keep the inmates in proper bounds should be adopted. By gentle-

ness and kindness, rather than coercion, grand results may confidently be expected. In a full and learned article by Dr. D. A. Morse, published in the transactions of this Society last year, upon Dipsomania and Drunkenness, the opinion of the Profession is embodied.

In order to obtain the expression of this Society, I would suggest and recommend that the following resolutions be adopted:

Resolved, That in the opinion of the Medical Society of the State of Ohio, an appropriation of one hundred thousand dollars should be made by the Honorable Members of the Senate and House of Representatives of the State of Ohio, for one or more Inebriate Asylums in this State.

Resolved, That a committee of one from each auxiliary, and two from the State Medical Society, be appointed by the President of this Society, to prepare, print, and present a memorial to each member of the Senate and House of Representatives, with brief and explicit reasons *why* an appropriation should be made by the State, for one or two Inebriate Asylums in this State.

Respectfully submitted,

JOHN W. RUSSELL,

Chairman Committee.

INORGANIC CARDIAC MURMURS.

—BY—

A. T. KEYT, M. D.,

CINCINNATI, O.

INORGANIC CARDIAC MURMURS.

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Inorganic or functional cardiac murmurs are those which originate at the heart independent of structural change. The fact of the existence of such murmurs needs, at this day, no illustration or proof; but the appreciation of their full significance is a matter eminently worthy of our aim and study.

Murmur is the cherished sign of heart disease. It speaks of something wrong at the center of the circulation, and, when carefully interrogated, it usually answers with very precise and accurate information. It thus clothes itself with an exceeding interest. Its value is confessedly pre-eminent in the determination and discrimination of organic cardiac change. Yet, when it is known that the sign is also present in mere functional disorder and excitation of the organ, we are stimulated to inquire into the traits and circumstances of functional murmur, its frequency and extent, its mechanism of production, and its diagnosis from organic murmur—a field, indeed, which has not been neglected, but whose further cultivation may yield additional valuable fruits. The essayist's attempt may not be followed by

direct results, yet he would fain hope that in some way it may "help to new facts."

CHARACTER AND SITUATION OF INORGANIC CARDIAC MURMURS.

Inorganic cardiac murmurs are soft, blowing sounds. They are always systolic in time, and are heard at two principal sites of maximum intensity: one at the second right costal cartilage, near the sternum; the other at, or in the neighborhood of the third left costal cartilage—this left site being sometimes as high as the second left cartilage, sometimes more toward the left apex, sometimes nearer mid-sternum, rarely lower down. All agree that murmur with maximum intensity at the first point named, proceeds from the aortic orifice or artery; but difference of opinion obtains as to the origin of murmur with maximum intensity at or near the third left cartilage. Parrot located it at the right auriculo-ventricular orifice; Da Costa at the mitral valve; Hughes in the pulmonary artery. Hope held that functional murmur was only developed at the aortic orifice. Walshe states: "This murmur is, as far as I have observed, invariably basic in seat and systolic in time, produced at the orifices of the aorta and pulmonary artery." Flint writes: "An inorganic murmur may be produced either at the aortic or pulmonic orifice, or simultaneously at both orifices." And Fothergill, that "anæmic murmurs are usually aortic, but may be mitral."

Withholding for the present an expression as to the existence or not of functional apex murmur, we regard all inorganic murmurs located as described as unquestionably basic in seat, and accordingly we designate them, when distinguishable, as right and left basic—the first developed at the aortic orifice; the second at the pulmonic orifice.

The murmur may be heard over the entire base, so that the

aortic and pulmonic elements appear of equal intensity. The instances where the pulmonic sound predominates over the aortic are far more frequent than the converse; and the instances where the pulmonic sound alone is heard, are again far more numerous than where the aortic alone is heard. The aortic element is more likely to manifest in the murmur from hæmic changes.

Also in further comparison, the aortic murmur is more restricted to a narraw area; the pulmonic is more diffused, and may reach, in fainter tones, the limit of the left apex. It is understood that functional murmur is seldom heard between the scapulæ.

The exaltation of the left basic or pulmonic murmur, implied by the foregoing account, is, we are aware, something different from the usual teaching; nevertheless, we believe the estimate is true, and, further on, we may be able to produce some of the evidence upon which our conviction rests.

Inorganic murmur is peculiarly inconstant in existence and variable in intensity: then it was present, now it is absent—then it was plain, now it is indistinct; and usually it appears in excited, and disappears in tranquil circulation. It is developed in certain morbid conditions of the system, such as are marked by changed blood-states, and becomes inaudible when systemic health is restored. It may be heard in a proportion of healthy individuals under circumstances of excited cardiac action; and in certain few, sick or well, it may be produced by the pressure of the stethoscope over the points at which the great arteries, particularly the pulmonary, come nearest the chest wall. It is audible in some only in certain positions of the body, and sometimes it is markedly modified by states of the respiration; thus, in one, being only or best heard in sustained inspiration, and in another in sustained expiration. When occurring in connection

with blood change (hæmic), it is usually accompanied by murmur over the carotids and other large arteries, and by the venous hum, *bruit de diable*, in the neck.

If functional murmur originate at the mitral orifice according to all accounts it is particularly fitful and intermitting, in contradistinction with sustained murmur of this site from structural lesion. It is said by some to be best heard above and within the usual locality of organic apex murmur, and to be usually confined to the cardiac limits in front.

Otherwise than by intensification of the sounds of the heart, especially of the first, which is usually observed, these are not materially changed in the presence of functional murmur.

THE SCOPE OF INORGANIC CARDIAC MURMURS.

The scope of inorganic cardiac murmurs is altogether of very considerable extent. The conditions which are known to have furnished instances, are active exercise, febrile reaction, and palpitation from whatever cause arising; chlorosis and ænemia; chorea; pregnancy; uræmia, septicæmia, diptheria, scorbutus, purpura, the xanthemata, typhus and typhoid fever. It is to be regretted that we know so little of the true relation, numerical and other, which murmur sustains to these several conditions. As it is, our statement of the matter can only be approximative and very general. However in regard to some of these relations, we have attempted to throw some additional light by the introduction of some special observations of our own.

Active muscular exercise, owing to the acceleration it creates in the action of the heart, would seem to offer a peculiarly fitting state for the development of murmur at the arterial orifices; and in a very general way it is taught that functional murmur is sometimes so produced. Da Costa has gone further than

others in showing that murmurs from mere temporary functional excitement of the heart, as by exercise, are not uncommon. He roughly estimates that such a murmur can be produced in at least one out of twenty healthy persons, and he is inclined to put down the proportion as much larger.*

In order to arrive at something definite in regard to the power of exercise to develop murmur in healthy persons, and to obtain information on other points, we planned and carried out a series of observations upon school-boys. We carefully examined them, one by one, and only accepted those in perfect health and free from murmur or noticeable cardiac imperfection of any kind. First the boy was numbered and a record made of his age, respiration rate, pulse rate, normal action of his heart, and relative intensity of the right and left second sound. Then he was sent out to walk briskly to a point four hundred feet off and return. Immediately on his return we examined his heart, while Dr. A. B. Isham examined the pulse and respiration. When murmur was detected, we were attentive to its character, its point of maximum intensity, and the extent and direction of its diffusion. Also the results, as recorded, were verified by Dr, Isham in all cases but a few in which the murmur had disappeared before he was through his part of the examination. The record shows one hundred and two (102) examinations, with distinct murmur in thirty-three (33) cases. The murmur was soft in every case. In one only was there an approach to an exception. Of this case, the following is the record:

"No. 53; age 11 years. *Before walking*—Respiration 24; pulse 96; heart's action normal; second sound of the heart plainer at the second right cartilage. *After walking*—Respira-

*Am. Jr. Med. Sci. July, 1869, p. 26.

tion 38; pulse 140; heart's action regular; murmur with equal intensity at right and left base, heard also in the upper part of the right vertebral groove and faintly at the apex—disappeared with the falling of the pulse; murmur louder and more diffused than any functional murmur we have ever heard, but not *harsh.*"

The murmur was marked as basic in every instance. In only two examples, could any doubt as to the proper localization arise. In one of these, the murmur was heard further to the left than in the others; in the other, the murmur, though located definitely at the third left cartilage, and but faintly heard beyond this point in front, was also faintly audible in the left back. The thirty-three (33) cases, then, of functional murmur gave thirty-one (31) of unequivocal basic murmur, and two cases about which there might be controversy, but which we unhesitatingly place in the basic class.

Twenty-four (24) times out of the thirty-three, the murmur presented alone at the left base, in the larger proportion at or near the third cartilage; in the smaller, at or near the second. Six (6) times the murmur was accentuated at the left base, yet heard at the right, or at the apex, or at both points. Of these last, three were distributed to both the right base and the apex, two to the right base and not to the apex, and one to the apex and not to the right base.

Of the whole number, two (2) were noted with equal loudness at both the aortic and pulmonic spaces. One of these is No. 53, already given; the other is No. 69, age 12. *After walking*—Respirations 40; pulse 132, regular; murmur less intense than the first; was heard equally well at the two points named, and faintly at the apex.

In only one case was there accentuation at the second right cartilage. This is No. 86, age 9. *After walking*—Respiration 45; pulse 144, regular; murmur accentuated at the second right cartilage, not extending much above this point; heard also at third left cartilage, but not at apex.

		BEFORE WALKING.						AFTER WALKING.			
Number.	Age.	Respiration.	Pulse.	Heart's Action.	Pulmonic Second Sound Louder.	Aortic Second Sound Louder.	Both Equal.	Respiration.	Pulse.	Heart's Action.	Murmur.
1	9	24	96	Normal	"			38	144	Reg	No murmur.
2	13	24	88	"	"			36	160	"	Soft murmur confined to the pulmonic space.
3	12	20	80	"	"			42	168	"	No murmur.
4	12	28	96	"		"		36	156	"	do
5	11	26	96	"	"			54	160	"	do
6	11	20	96	"	"			32	140	"	Murmur at left base, not heard at right base or apex.
7	10	24	96	"	"			44	172	"	No murmur.
8	10	24	88	"			"	36	132	"	do
9	11	20	88	"	"			32	148	"	do
10	9	24	100	"	"			32	128	"	do
11	9	20	88	"	"			36	120	"	Soft murmur at left base.
12	10	20	88	"			"	36	172	"	No murmur.
13	8	20	96	"	"			32	152	"	Soft murmur at left base.
14	8	28	92	"			"	36	132	"	No murmur.
15	11	24	80	"			"	38	140	"	Soft murmur at left base.
16	10	28	92	"			"	30	124	"	No murmur.
17	16	24	100	"	"			40	164	"	Soft murmur at left base.
18	11	24	88	"			"	25	100	"	No murmur.
19	10	24	100	"	"			32	160	"	Soft murmur at left base.
20	9	24	92	"	"			32	140	"	No murmur.
21	17	18	80	"	"			40	192	"	Soft ffiurmur at left base.
22	9	28	100	"	"			38	168	"	No murmur.
23	6	24	100	"	"			36	140	"	do
24	11	24	100	"		"		40	176	"	do
25	9	24	88	"	"			42	152	"	do
26	10	24	104	"			"	36	188	"	do
27	11	20	88	"	"			37	148	"	do
28	11	24	100	"	"			32	140	"	Soft murmur at left base.
29	12	24	92	"	"			34	140	"	No murmur.
30	12	24	96	"	"			32	144	"	do
31	12	24	100	"			"	40	168	"	do
32	12	24	108	"	"			34	172	"	do
33	12	22	92	"		"		30	160	"	Soft murmur at left base.
34	10	28	96	"	"			40	160	"	Soft murmur at left base, less plain at right base and at apex.
35	11	24	98	"	"			36	160	"	No murmur.
36	12	24	84	"	"			32	152	"	Soft murmur at left base.
37	10	24	96	"	"			32	168	"	No murmur.
38	7	24	88	"	"			28	156	"	Soft murmur at left base.
39	7	28	96	"			"	48	144	"	No murmur.
40	9	24	96	"	"			36	164	"	do
41	8	24	96	"		"		45	140	"	do
42	12	16	84	"	"			30	160	"	do
43	9	24	96	"	"			36	136	"	do

		BEFORE WALKING.							AFTER WALKING.			
Number.	Age.	Respiration.	Pulse.	Heart's Action.	Pulmonic Second Sound Louder.	Aortic Second Sound Louder.	Both Equal.		Respiration.	Pulse.	Heart's Action.	Murmur.
44	14	20	96	Normal	"				24	172	Reg.	No murmur.
45	12	24	100	"				"	40	168	"	Soft murmur, left base.
46	10	24	96	"	"				40	134	"	No murmur.
47	11	28	92	"	"				36	120	Irreg.	Soft murmur, left base.
48	14	24	72	"	"				36	132	Reg.	Plain murm'r left base.
49	14	28	94	"	"				40	148	"	Distinct murmur, left base, faint at apex
50	16	24	96	"	"				30	136	"	No murmur.
51	18	20	68	"	"				36	96	Irreg. int'mit.	do
52	19	28	80	"		"			36	152	Reg.	do
53	11	24	96	"		"			38	140	"	Murmur with equal intensity at right & left base; heard in upper part of right vertebral groove, and faintly at apex; disap'ear'd with the falling of pulse. Murmur louder and more diffused than any functional murmur we have ever heard, but not *harsh*.
54	8	24	92	"	"				32	104	"	Murmur left base, faint at right base, not he'rd at apex.
55	7	28	92	"	"				30	100	Irreg. int,m't.	No murmur.
56	12	24	96	"				"	40	164	Reg.	do
57	13	26	88	"	"				42	144	"	Soft murmur, left base.
58	14	20	64	"	"				48	120	"	do
59	12	16	80	"	"				36	128	"	No murmur.
60	12	16	88	"	"				40	160	"	do
61	11	26	96	"	"				40	160	"	do
62	12	24	100	"		"			40	172	"	do
63	13	24	88	"	"				48	156	"	do
64	14	16	80	"	"				36	148	"	Soft murmur, left base.
65	12	24	96	"	"				40	164	"	No murmur.
66	13	28	84	"	"				50	176	"	do
67	12	24	92	"	"				45	160	"	do
68	7	28	96	"	"				48	120	Irreg. int'm't.	do
69	12	28	72	"	"				40	132	Reg.	Murmur less intense than in 53; equal at right & left base, faint at apex, not certainly heard in back.
70	6	30	100	"	"				36	120	"	No murmur.

		BEFORE WALKING.						AFTER WALKING.			
Number.	Age.	Respiration.	Pulse.	Heart's Action.	Pulmonic Sec'd Sound Louder.	Aortic Second Sound Louder.	Both Equal.	Respiration.	Pulse.	Heart's Action.	Murmur.
71	13	24	92	Normal	"			54	180	Reg.	Soft murmur strictly at left base.
72	7	24	88	"	"			36	144	"	No murmur.
73	11	24	92	"	"			44	168		Murmur plain at left base, faint at right.
74	9	28	76	"		"		40	104	"	No murmur.
75	14	20	96	"	"			40	172	"	do
76	10	24	80	"	"			32	112	Irreg.	do
77	13	20	92	"	"			36	168	Reg.	do
78	10	28	88	"	"			32	160	"	do
79	11	28	84	"	"			32	128	Irreg.	Soft murmur at left base, with some beats.
80	11	24	100	"	"			36	140	Reg.	No murmur.
81	12	20	80	"	"			32	124	Irreg.	do
82	9	24	96	"	"			42	136	Reg.	do
83	7	28	100	"			"	40	144	Irreg.	Murmur at left base, with some beats; faint at right and at apex.
84	15	24	96	"	"			36	144	Reg.	No murmur.
85	7	26	100	"	"			48	168	"	Soft murmur at left base.
86	9	28	84	"	"			45	144	"	Murmur distinctly accentuated at right base; not heard at apex.
87	7	28	100	"	"			60	180	"	No murmur.
88	8	24	84	"	"			48	150	"	do
89	11	24	84	"	"			64	188	"	do
90	13	24	80	"	"			36	144	"	do
91	9	28	96	"	"			36	168	"	do
92	14	24	72	"	"			48	180	"	do
93	13	24	76	"	"			36	144	"	do
94	12	24	92	"	"			48	200	"	do
95	12	28	96	"			"	40	176	"	Murmur at left base more to the left than in the others.
96	10	28	72	"	"			32	144	"	No murmur.
97	13	28	96	"		"		40	148	"	Soft murmur at left base.
98	8	28	96	"	"			32	132	"	No murmur.
99	13	24	88	"		"		28	144	"	Soft murmur at left base.
100	13	20	84	"			"	26	180	"	No murmur.
101	9	24	96	"	"			30	144	"	do
102	15	28	92	"	"			36	168	"	Murmur plain at left base, indistinct at right and apex; also faintly audible in left vertebral groove.

The boys in their eagerness were somewhat excited, which will account for the pulse and respiration before exercise being higher in many of them than would be natural at a state of rest. After exercise the respirations were counted subsequent to the pulse; so that owing to the rapid fall the real frequency when the boys first came in, was greater than expressed in the table.

Some particulars were definitely observed, which do not appear in the record. The heart's action was forcible in all, violent in many; while the pulse did not keep pace with this augmented action, but, on the contrary, in many it exhibited marked feebleness. The sounds of the heart were preternaturally loud and clear, and in many, the first sound at the apex had a decided ringing quality. When murmur was heard it did not seem to interfere in the least with the heart-sounds. In some, the murmur was plainly caught in the height of the excitement, but in a moment or two it was gone. In others, the turmoil and clamor seemed at first to drown the murmur which became evidentwhen the excitement had somewhat calmed. In all, the rapidly falling pulsations soon put an end to the murmur.

It is worthy of statement that at least twelve boys were refused on account of their betraying signs of organic affection; of these, much the larger number presented apex systolic murmur, two basic diastolic, and two basic systolic. Of the last two murmurs, one was unmistakably aortic, and the other was probably also aortic, though not particularly accentuated at either this or the pulmonic site.

In the beginning of acute attack, especially in children and females, according to our observation, a soft bellows-murmur is often heard at the base, which subsides with the decline of the first excitement. The sound is usually confined to the pulmonic site; we have not observed it as confined to the aortic site.

Occasionally, with maximum intensity at the left base, it is heard faintly, as far as the apex in one direction, and the limits of the aortic area in the other. Exceptionally, it is heard with equal intensity at the right and left base.

We will here say that, for some considerable time past, we carefully examined, with reference to this point, all our patients of the class named, and have been surprised at the number who presented the murmur. According to the impression left on our mind by these observations, we feel safe in estimating the number of murmur betraying patients, under these circumstances, at not less than one-third the whole.

Ordinary palpitation, no doubt, affords in full complement the cases of basic murmur that have been credited to it by writers; but the connection between it and apex murmur without mitral lesion, in view of the contradictory testimony on the subject and the negative results of our own experience, we must regard as an unsettled question. Yet upon the whole, we are inclined to admit the association as a rather rare phenomenon in cases of irregular tumultuous cardiac action.

Under the latter derivation is appropriately noticed the murmur of Da Costa's (Am. Jour. Med. Sci., July 1869, p. 17) irritable heart. His idea of the frequent occurrence of functional cardiac murmur in a group of cases not anæmic, characterized by prolonged excitement of the heart's action is undoubtedly well taken; but his idea that this murmur is an apex murmur, we confess our inability to perceive, as borne out by his argument or cases. His careful localization of the murmur corresponds more nearly with the left base than with the apex; and indeed, if we merely substitute in his description the third cartilage for the third interspace, we will have described very accurately the more usual locality of murmur proceeding from the pulmonary orifice. And in fact the cases he details are readily

analyzed into those whose murmur is pulmonic and functional, and those whose murmur is mitral and organic. Notwithstanding this, our exception to his localization of the murmur, the profession is indebted to Da Costa for bringing to light a group of frequently occurring cases, which adds much to our previous knowledge of the scope of functional murmur.

Co-existence of functional murmur with organic change, we can only conceive as applicable to our subject in cases where the arterial orifices and cavities remain intact, and the heart is incited to preternatural activity by some change; as, for instance, a defective mitral valve permitting of slight regurgitation. Here basic murmur would be purely functional, while apex murmur, though only engendered under the excited circulation, would have the obvious organic basis, and could not truly be said to be functional.

Changed states of the blood are the conditions which, according to all writers, lead most surely and frequently to the production of murmur. The sudden reduction of the quantity of the circulating mass is followed, as observed by Dr. Marshall Hall and others, by the phenomenon in question. We, too, have witnessed the same result after excessive uterine hemorrhage.

It is notorious that chlorosis and anæmia yield the murmur in a large per cent of the cases. In these conditions the murmur is plainer, more diffused, and usually heard over the large arteries as well. The veins, also, in the neck send forth their continuous hum. When we reflect how very often anæmia passes under the notice of the physician as principal or concomitant affection, the extensive range of murmur from this source becomes impressively apparent.

It is a well-known fact that heart-murmurs are very frequently associated with chorea. The question that concerns us now is, to what extent are they inorganic? In this disease the murmurs

heard are both basic and apex; and it is difficult to say which of the two sorts is the more common. We should say the basic murmur is almost invariably functional (though organic basic murmur is not out of the question). Pronounced anæmia being a leading feature of chorea, and palpitation a common accompaniment, functional murmur the offspring of these conditions, must needs declare itself as a very frequent phenomenon in chorea. And this accords with experience. Trosseau teaches (Clinical Medicine, article "Chorea") that "palpitation and soft blowing murmurs are often present in chorea; and that the murmur is usually basic and due to anæmia."

But as before stated, apex murmurs are also very frequent in chorea. Two main theories are put forth to account for this connection—one that the mitral valve is incompetent in consequence of changes wrought by endocarditis; the other that it is incompetent in consequence of irregular action of its muscular apparatus. The advocates of the first invoke the pathological relationships between chorea and acute rheumatism: those of the second, the discordant muscular movements of chorea. Into the merits of the controversy we obviously can not here enter, but beg leave to state that with the evidence at our command, we conclude that while organic mitral regurgitant murmur is often present in chorea, the existence of a purely inorganic mitral regurgitant murmur is yet *sub judice.*

The development of cardiac murmur as a concomitant of pregnancy can not be regarded as a very frequent occurrence, yet the connection is occasionally observed. It is more likely to be met with in cases where anæmia is apparent, and especially likely to be found in cases presenting the "irritable heart." As a good illustrative case, we present the following, which recently passed under our care: The lady was six months pregnant with her eighth child, and for some weeks previous had suffered

from palpitation and for a few days from myalgia. Her general appearance was delicate, but not decidedly anæmic. Her pulse was 120, quick, and heart's action excited; respiration correspondingly frequent. The sounds of the heart were all distinct and preternaturally clear. A soft systolic murmur was audible with maximum intensity at the base; it was well heard at the aortic cartilage, but more distinctly at the pulmonic cartilage. It was heard equally well to the right and left of the upper end of the sternum. The sound impressed the ear as if beginning with the first sound and then flowing on or away till drowned by the sharp second sound. Arterial murmur was distinct over either carotid. No venous hum. The murmur was not certainly heard in the back. The excited cardiac action and accompanying basic murmur persisted until a few days after delivery, and then the one subsided and the other departed as by magic.

The other conditions named as contributing examples of functional murmur, we pass without particularizing, excepting the general record that murmur has been observed with more or less frequency in all of them.

Thus, functional murmur has a breadth of range and frequency of manifestation that renders the subject one of exceeding importance. It may be thought if inorganic murmur has such scope, where is the paramount value of murmur as a sign of organic heart disease. The value remains to those, and only those who thoroughly understand the whole subject.

THE MECHANISM OF INORGANIC CARDIAC MURMURS.

Before entering upon this branch of the subject, we wish to premise—

First. Experiments with liquids passing along or through

cavities and tubes, in imitation of what takes place at the heart and in the vessels, with a view of ascertaining the sonorous phenomena, have been made over and over again. Nothing can be expected to be gained by further experimentation in this direction. But, in verification of the results obtained, and illustrative of the way in which cardiac murmurs are produced, we beg leave to refer, as we advance, to the sounds produced by the simple working of the elastic syringe, under different conditions, intended to represent, in some manner, those pertaining to the movements of the heart and the blood it conveys.

Second. We premise that we subscribe to the view that, in general terms the first sound of the heart is due to the sudden closure of the auriculo-ventricular valves, and the impulsion of the blood against them; and the second sound to the like closure of the semi-lunar valves, and impulsion of the blood against them.

The sounds thus produced, when compared with each other, have points of difference; but both are short, well defined, and abruptly ending. They are stationary sounds—beginning and ceasing at the same spot. They symbolize the arrest of the blood at the moment, by the mechanism of the valves.

Murmur is distinct from the cardiac sounds. It results from the transit of the blood, under the required conditions, through the orifices and along the passages. It is more prolonged, less defined, and when not obliterated by the next heart-sound, it dies away. It distinctly impresses the ear, as a moving sound, and carried along with the current. It symbolizes the passage of the blood, at the time, in direct or reverse course. In a word, murmur is distinguished from the heart-sounds in that it is the sound of a passing fluid, generating and conveying sonorous vibrations as it goes. Thus one order of mechanism produces the cardiac sounds; another the cardiac bruits. In work-

ing the elastic syringe, the click of the valves represents the sounds of the heart, and the soft noise of the fluid issuing through the different orifice, the cardiac systolic direct murmur.

Passing to the immediate subject: The blood ever moves along its accustomed channels with a degree of friction between its columns and the surface over which they glide. This friction must inevitably cause vibrations in the parietes, and in the blood itself, and, which sets of vibrations are instantly intercommunicated. Friction, then, and resulting vibrations are inseparable from the circulation of the blood.

The blood at the heart passes from aperture to cavity, and from cavity to aperture. It is subjected to a pump-like action, and forcibly propelled by the contracting ventricles through the efferent orifices, where it meets and clashes with that already in the arteries. All this disturbs the equal flow, and causes eddies and jarring currents—in a word, vibrations in the blood—and these are at once transmitted to the parietes.

Then, especially at the heart, we have vibrations from the combined operation of friction and blood agitation. The vibrations are inevitable; though, when all is natural, they are not sufficiently sonorous to be audible at the surface of the chest. Indeed, in health, the adaptation and harmony between the moving blood and the containing organs are so complete that the circulation is maintained with the least possible amount of attrition and commotion. The heart with its perfect mechanism and rhythmical movement; the membrane with its delicate smoothness, that lines the cavities, valves, and orifices; the blood, with its peculiar constitution, happily combining fluidity, density, viscidity, and yet extreme mobility—all concur to facilitate the circulation, and render it regular and equal, and as smooth and free from vibrations as can be within the ends to be accomplished.

Thus, in the conditions of healthy blood, moving with natural velocity through normal cavities and passages, the friction and agitation prove not sufficient to develop audible murmur. But change the conditions so as to disturb the harmonious relationship between the flowing blood and the containing parietes (otherwise than by slowing the circulation), and accordingly the vibrations are increased, and prove quite sufficient for the production of audible murmur.

For the purpose of fuller illustration, we will here refer briefly to the mechanism of organic cardiac bruits. When the change affects, structurally, the heart and great vessels, we have in marked degree the disturbed relationship, and, through it, the causes of the sonorous vibrations which reach the ear in the form of organic murmurs. If the orifices are contracted, or the endocardium roughened, the blood in its onward flow, meets with obstruction or impediment that can but give rise to increased friction and commotion, engendering vibrations so plainly audible as the presystolic and systolic direct murmurs.

And when the valvular barriers are impaired, the backward flow of the blood over their tense, and usually rigid and roughened rims, with the blood-stream already broken up and in commotion, thrown into greater tumult by its collision with the opposing column, we have ample causes for the vibrations which express themselves so strikingly as the systolic and diastolic regurgitant murmurs.

Again, the systolic direct murmur that is heard in dilatation of one or the other ventricle, without orificial or valvular change, finds its best explanation in the disproportion which exists between the caliber of the ventricle and that of the arterial opening, whereby the latter sustains to the former the relation of a contracted orifice to a normal ventricle, and consequently affords the same conditions for the production of sound.

It is also plausible that in dilatation of the ventricle, misdirection of the current, so that the blood is propelled against, instead of directly through, the orifice, may be sometimes a sufficient cause of murmur.

Now, as regards the production of inorganic murmurs, this, too, requires a departure from the healthy and normal conditions and relationship between the heart and its moving contents; but, in this case, the change concerns the blood, its quantity, quality, and rate of movement. Likewise the same principles of friction and jarring currents, engendering vibrations and sound, obtain here as in the mechanism of sound from organic lesions.

In all cases, in order to the development of murmur, organic or inorganic, a certain velocity of the blood current is a *sine qua non;* though it may be remembered that quickened transmission through the orifices is sometimes in alternation, with lengthened intervals between the systoles. In the presence of structural change, the rate required may not be above, or may even be considerably below, that of the normal circulation; yet here, too, it is known that the movement may be slowed to the point at which murmur is no longer heard. In the absence of organic change, a higher velocity is required; and though other influences than this may, and often do, contribute to the result, the statement is undoubtedly true that inorganic cardiac murmur is incompatible with other than a quickened transit of blood at the heart.

These principles are well shown by the syringe. The bulb represents the ventricle; the efferent orifice, with its valve intact, the arterial orifice roughened by disease; the water, the blood. It will be found that the bulb, subjected to a very moderate compression-rate, sends the fluid through the orifice with sufficient rapidity to generate sound, but that the compression-

rate may be lowered until the current becomes silent in its passage. Now, remove the valve, and the smooth, unobstructed orifice will represent the normal arterial orifice; and it will be found that a notably more rapid compression-rate is required to elicit the murmur.

The quickened current acts in the production of murmur by carrying the blood against and through the orifices with such impetuosity as to augment the friction and blood commotion to the extent of developing the requisite sonorous vibrations.

By this principle alone must be explained the murmur of palpitation, from whatever cause produced, not connected with cardiac or hæmic change.

The next instance of murmur, whose production we attempt to explain, is that following great and sudden reduction of the volume of the blood. The reaction which succeeds such loss is marked, especially, by that excited action of the heart whose effect we have just considered, and which impels the blood through its chambers and orifices, and along the great arteries with vibratory, sound-producing thrill. Again, the reduction of the volume of the blood permits the arteries, by virtue of the elasticity of their coats, to contract, while the cavities of the heart remain nearly or quite of the same capacity, thus virtually establishing the relationship and murmur-evoking property of constricted orifices. The principle needs no illustration, that, with the same rate of contraction, the blood is forced by the ventricle through a narrowed opening much more rapidly than through a normal one. Once more; when the amount of blood is diminished, the tension of the cardiac and arterial walls is lowered, whereby they are placed in condition to be more readily thrown into vibrations than when they are well filled and the tension is higher. The principle so thoroughly proven by experiment, may be verified again by the syringe and appropriate

apparatus for working it at lower and higher pressure of the fluid. Thus it is found that a given current-rate becomes audible at a lower, and inaudible at a higher tension. This principle must have force at the heart, and be an important factor in the explanation of murmur from loss of blood.

The additional circumstance of the blood becoming watery under hemorrhage, and thus favoring vibrations, is not to be lost sight of in this connection; but a fuller consideration of the agency of thinness of blood is just at hand.

Murmur associated with qualitative blood-changes next seeks solution. This is confessedly a difficult problem. However, the murmur of chlorosis and anæmia would seem to be due in great measure to the leading pathological feature, tenuity of the blood. The fact that sound is more strikingly incident to the passage of a thin liquid than to that of a thicker one along membranous tubes, has been amply attested; but it may be shown afresh by recourse to our favorite instrument. If, first, water be passed, it will be noticed how gentle the propulsion required to evoke distinct sound; if next, a more consistent liquid, as solution of starch, be passed, it will be noticed, in contrast, how vigorous the propulsion required to elicit the same sonorous effect.

According to this principle blood preternaturally thin, propelled through the cardio-arterial orifices, must originate increased sonorous vibrations. A watery state of the blood characterizes especially chlorosis and anæmia—conditions *par excellence*, we have seen, in which functional basic murmur presents. Hence, may we not conclude that thinness of the blood is the efficient producing agency of the cardiac bruits heard in these cases? Other influences, we may presume as operating toward this end, are the usually quickened circulation, and appertaining loss of tonicity in the heart and arteries.

The murmurs which are occasionally heard in the other conditions than those just named are probably to be explained by a combination of agencies. Thus we conceive the cardiac bruit of pregnancy may arise from augmented velocity of the current, through the orifices, in connection with the increased fluidity of the blood by diminution of the red corpuscles and augmentation of the water known to prevail in this condition. And in septicæmia, scorbutus, purpura, the exanthemata, typhus and typhoid fever, etc., murmur, when present, would seem to be due partly to the blood's quickened transmission, partly to its diminished viscosity. answering to a broken-down diffluent condition, and partly to reduced tonicity in the cardio-arterial parieties by which, as in decreased tension, they are more readily thrown into sonorous vibrations. These factors undoubtedly pertain to these affections, though they are variously combined, and are operative in accordance with the individual manifestations.

THE MECHANISM OR INORGANIC APEX MURMUR.

The foregoing remarks have applied almost exclusively to functional basic murmur. Inasmuch as the existence of functional apex murmur is admitted by many, the proposed mechanism of its production properly claims attention. The explanation is by the way of the conditions which prevent the closure of the auriculo-ventricular valves, and the regurgitation permitted to take place through them. The notion (Bamberger) that the murmur is due to the peculiar sonorous quality of the valves themselves, acquired through atony from fatty degeneration of the musculi papillares, we dismiss with the remark that such intonation of functionally perfect valves, if produced, would only constitute a modification of the first sound

of the heart, and not be a true murmur, which is always the sound of a passing fluid. Moreover, such modified sound would be strictly of organic origin, instead of inorganic, with which we are now concerned. The sound in question, when produced, is none other than a regurgitant murmur. To account for the reflux, there is first, the idea of Andrew, which has certainly the merit of ingenuity, that the valves do not perfectly close the orifice, because the latter, during the ventricular systole, assumes a round instead of the normal oval form, to which alone they are adapted. But the more common explanation is that the valves are rendered temporarily incompent by irregular contraction of the columnæ papillares, whereby those segments are kept from completely closing, and the blood issues through the crevice. Thus, Walshe writes: "The most plausible hypothesis seems to be that irregular and occasional reflux takes place at the mitral orifice, through disordered action of the muscular apparatus connected with the valves." And so Flint refers this, to him, dubious murmur, "to irregular contraction of the papillary muscles, involving temporary insufficency and regurgitation." And Fothergill, who by the way, has little to say of inorganic murmurs, esteems the systolic apex murmur, which he admits to be sometimes heard in Basedow's disease, "as liable to occur from disordered action of the musculi papillares," and suggests the same cause as probably productive of the murmur in Da Costa's "irritable heart." And so on, this theory is almost universally reiterated as offering solution of the problem. It is, indeed, singular there should be such accord upon a matter of mere assumption; for it must be admitted there is not a particle of proof that these fleshy columns ever contract, except in unison with the body of the ventricle. The idea would seem to have grown out of the frequent association of apex murmur with chorea, and the

naturally easy ascription to the heart-muscle, as a whole, of similar discordant action to that observed in the general choreac phenomena. And yet one would think the entire absence of evidence that chorea ever affects involuntary muscles, together with the fact that the rhythm of the heart is usually regular in this disorder, ought to be sufficient to make one hesitate to assent to this specious notion. If we have reason to doubt the reality of discordant action of the papillary muscles in chorea, much less can the idea be satisfactorily maintained as applied to ordinary palpitation.

A theory more plausible to our mind than any of these, would be that regurgitation takes place under the immediate tumult of the heart and action of the moving blood itself upon the valves. In the general tumult and disorder, the blood in the ventricle catches the floating segments in such way that, instead of sweeping them shut, as in normal action, it holds them apart and regurgitates through; or, in other words, a portion of the blood in its quickened and disordered movement gets the start, as it were, of the closing valves, and makes for itself a reverse passage. But really the explanation should come from those who believe this murmur is of comparatively frequent production, and not be attempted by us who confine its possible range to such narrow limits.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATION IN FAVOR OF THE RELATIVE PROMINENCE OF PULMONIC INORGANIC MURMUR.

In support of the prominence, we have assigned to murmur proceeding from the pulmonic orifice, we here state, in addition, the following anatomical and physiological considerations:

1. The velocity of the current through the pulmonic orifice

is the same, or very nearly the same, as through the aortic orifice; and hence the vibrations, due singly to rapid transit of the blood, are produced at the former orifice with the same, or very nearly the same, intensity as at the latter.

We accept as true, the usual teaching that the right ventricle and right arterial orifice are larger, respectively, than the left ventricle, and left arterial orifice. We have not the data for a mathematical computation, but regard it a reasonable inference that the ratio between the capacity of the ventricle and area of the corresponding arterial orifice on one side is about equal to that on the other. It follows, then that the ventricles contracting and completing their contraction synchronously, the blood they contain must be propelled through either orifice at about the same rate of speed.

Then we conclude that the velocity of the blood-current through the pulmonic aperture, in the same manner as through the aortic, is quite sufficient to generate sonorous vibrations.

2. The vibrations are reinforced at this orifice, because of its larger size admitting of a larger blood-column, and thereby furnishing the conditions for a greater amount of friction and commotion, as well as a greater amount of membranous surface for vibratory impression—the whole effect being, as stated, to increase the pulmonic murmur.

3. The blood pressure and parietal tension in the right ventricle and artery markedly less than in the left, the blood and parietes of the former are more easily thrown into effective vibrations by the onward rush through the arterial orifice; and this is an evident cause of enhancement of murmur at the pulmonic site.

4. Another element of augmentation is, that the walls of the right ventricle and coats of the pulmonary artery are much thinner than those of the left ventricle and aorta, and conse

quently respond more promptly and freely than the latter, to the causes which produce the vibrations. It is needless to say that this is in correspondence with another principle well established by experiment.

5. The pulmonary artery, in origin and first part of its course, lies in front of the aorta, nearer the chest-wall; and consequently the vibrations communicated to its parietes are more readily transmitted to the surface. This is a fact which needs no elaboration; its importance must be at once acknowledged.

These considerations are of positive import, and each, except the first, declares its quota of advantage for the pulmonic murmur. The first—namely, velocity of flow through the pulmonic orifice—if not exactly equal to that through the aortic, is, as we have seen, so slightly less, that we claim the difference would be more than made up by the least of the factors which enhance the pulmonic murmur.

We would next support our view by an argument drawn from the phenomena of the second sound of the heart. The loudness of this sound, other things being equal, must be in proportion to the energy of the forces which close the sigmoid valves. A light blood-pressure and a feeble arterial recoil must yield a comparatively low sound; while, conversely, a high blood pressure and strong arterial recoil must yield a comparatively loud sound. The forces which close the aortic and pulmonic valves, respectively, are manifestly of very different potency: the blood-pressure in the pulmonary artery being less, in the aorta much more; and the coats of the former being thinner and weaker, of the latter much thicker and stronger. We should expect a corresponding marked difference in the sound of the two sets of valves, and that the sound of the aortic would constantly and strikingly exceed that of the pulmonic valves. But the truth is at variance with this natural expectation. In

fact, the second sound of the heart, as heard at the third left cartilage, is always a well-defined, well-pronounced phenomenon, and is often (how often we will see further on) even more distinct than the second sound as heard at the second right cartilage.

There is the teaching of Skoda, well accepted, that accentuation of the pulmonic sound is declared where there is obstruction or regurgitation at the mitral orifice; and the showing, especially, by Fothergill, that the same intensification of this sound occurs in obstruction to the passage of blood through the lungs, from whatever cause arising. To this scope of relative predominance, we add what we believe also to be true, namely, that accentuation of the pulmonic sound over the aortic is a physiological manifestation in the majority of individuals. In support of this view we can find no authority, all published testimony being against it. Nevertheless, our conviction is the result of many careful observations, directed to this point. First, in a general way, we have compared the right and left second sound in a large number of patients affected with slight ailments, such as would not modify the relative status of the sounds. In these much the larger number presented accentuation of the pulmonic sound. Of these observations we kept no record, but the number was quite sufficient for deduction, and of the general result as stated there could be no question.

Next, in our observations upon healthy boys, before referred to, one object of study was the relative intensity of the right and left second sound. The one hundred and two boys ranging from six to nineteen years of age, were, one by one, carefully examined before walking with reference to this point. The record shows that the second sound of the heart was accentuated at the third left cartilage in seventy-eight (78), at the sec-

ond right cartilage in ten (10), and that the sound was equally loud at either point in fourteen (14).

Our argument is much strengthened by these results, but it can stand well even on the already accepted status of the two sounds; namely, that the pulmonic is uniformly well declared, and under impediment to the onward flow of the blood in the heart or lungs, it becomes signally intensified over the aortic. The explanation of this last phenomenon is, that the pulmonic valves are more energetically closed in consequence of the increased backward pressure of the blood against them, and in cases of permanent obstruction, the added influence of more or less thickening of the coats of the artery. Yet, with all reinforcement, the forces that shut these valves must be counted far inferior to the forces that shut the aortic valves. If permitted to pursue the line by the way of our facts—namely, that the left second sound is not only uniformly well pronounced, but usually intensified over the right second sound—we are presented yet more strikingly with the paradox that the greater pulmonic sound results from feebler forces, the lesser aortic from stronger forces.

Thus is demonstrated that there are causes which operate to reinforce or intensify the sound of the pulmonic valves which do not pertain to the aortic. Searching for these causes, we find certain anatomical and physiological conditions peculiar to the pulmonic site, and that these are essentially the same—acting, though it be, by different order of mechanism—as those whose effect, we argued, would be to reinforce the pulmonic *murmur*. They are, briefly, a larger blood-column and extent of membranous surface; less blood-pressure and arterial tension; thinner containing parietes; and last but greatest, nearer proximity of the valves and artery to the chest-wall. The pulmonic second sound and pulmonic murmur proceed from the same site at

the arterial orifice—the first from the backward flow against the closed valves; the second from the forward flow through the open valve; and it is plain, notwithstanding the different mechanism, that these reinforcing agencies must pertain to either alike. Thus the circle is complete; and from the phenomena of the second sound of the heart in its twofold character, we deduce an important and not easily questioned argument in favor of the relative frequency and intensity of the pulmonic murmur.

If, to the foregoing considerations, we here add mentally the clinical facts that may be adduced, showing the paramount frequency of this murmur, we think we have our justification for the conviction we expressed in the first part of this paper, viz: that pulmonic functional murmur is entitled to a different and more prominent position than hitherto assigned it.

THE DIAGNOSIS OF INORGANIC MURMURS.

Obviously the great end of our study of the subject of inorganic murmurs is, that we may appreciate their extent, and be enabled to make the diagnosis between them and organic murmurs. We have aimed in the foregoing exposition, to include all the points that would serve us in this important discrimination. But to secure evident advantages, we have chosen to present the diagnosis concisely as may be in a separate direct study.

The points to be considered in the differentiation are the character of the murmur, as to its quality, diffusion, and behavior; the bearing upon it of the associate circumstances and conditions, systemic and cardiac; its relations to the sounds of the heart; its rhythm, and the position of its maximum intensity.

Inorganic murmurs are uniformly soft in quality. This will not help us much, for the majority of organic murmurs are,

likewise soft bellows sounds. Yet, if a murmur is harsh or rough, or musical, we can positively decide that it results from organic changes.

Inorganic murmurs, as a rule, are not propagated far in any direction from the point of their origin, nor are they *ever* extensively diffused. They are usually heard over a part of the cardiac region in front, and only exceptionally in the back. These murmurs when of hæmic origin, have more diffusion, and are then often supplemented by arterial murmur and venous hum; but even here the limits of the true cardiac murmur are only moderately extended. Some organic murmurs are confined to as narrow or moderate limits as the inorganic. But others have a much more extended range. It is common for organic murmurs to be heard in the back, and not unfrequently, over the greater part of the chest. We recently examined a case where a mitral regurgitant murmur was plainly audible over the umbilicus in front and the buttocks behind.

Thus, if the murmur be very limited in its audible area, we strongly suspect from this that it is inorganic. If it be of moderate extent, the indication alone is of little value. But if the murmur be considerably diffused, we strongly suspect, and if extensively diffused we are positively certain, it is organic.

Inorganic murmurs, arising as they do from conditions in their nature changeable and temporary, are themselves inconstant, variable and transient. Organic murmurs, resulting as they do from conditions that are stable and permanent, are themselves constant, uniform and lasting. So strikingly apparent is this distinction, that inorganic is designated the "inconstant murmur," and organic, the "constant murmur." To its practical value, we know of but one drawback, viz: murmur depending upon a basis of structural change which is only developed under favoring auxiliary conditions. Such murmur

will come and go, aud change and fluctuate, just as a purely functional one. The best statement of the point we can make is, that all constant murmurs are organic, and all inconstant murmurs are inorganic, except a few with organic basis.

Circumstances apparently inconsiderable modify appreciably, sometimes decidedly, functional murmur. Thus, Dr. J. H. Hutchinson, (Am. Jour. Med. Soc., April, 1872, p. 407) reports three cases of functional basic murmur—two of which were located at the pulmonary cartilage, where the murmurs were distinctly intensified by placing the patients on their back. And it is well known that functional murmur is intensified in some by the act of held inspiration, and in others by the act of held expiration. It has not been observed that such influences so modify organie murmurs.

But of the associate circumstauces bearing upon the distinction, the most significant is the influence of states of the heart's action. Inorganic murmur, when present, is uniformly found in relation with quickened cardiac action. It appears with and continues through the acceleration, but becomes inaudible when quiet is restored. Organic murmur is in the rule constant under fluctuations in the circulation. It is often heard when the pulsations are preternaturally slow; and only in exceptional instances does it manifest alone under excited action. In practical application this test is invaluable. If the circulation is excited, and a murmur is heard, it may be inorganic or organic. If, in this case, the circulation becomes quiet, and the murmur ceases, the chances are largely that it was an inorganic murmur that was heard. But, if when the circulation becomes quiet the murmur is still heard, the rule will scarcely admit of an exception that it is organic; or if at the first examination, the heart is beating quietly without undue frequency or quickness of contraction, and murmur is heard, we may be sure it is of structural origin.

We admit that further observations are needed to determine whether in well-marked chlorosis and anæmia, where the vibrations, as known, are peculiarly sonorous, it might be possible to find the conjunction of inorganic murmur and a quiet circulation. But in the absence of necessary facts, we reason that cases of this condition, in which the blood would not pass the orifices with accelerated speed, would be difficult to find, and if found the murmur would not be there.

Age may be considered; inorganic murmurs being relatively more frequent in early life; organic in later. And sex—females being more prone than males to inorganic murmur.

Attention to the concomitant affection or condition is of more or less importance; in cases of doubt, it often becomes valuable. Yet the information thus derived is of itself usually equivocal, because the conditions which give rise to functional murmur are often found co-existing with structural heart disease; and certain systemic states in which heart disease is in direct pathological relation lead through blood-changes and functional excitation of the organ to inorganic murmur. However, it is well to take into the account the presence of anæmia, blood-loss, a nervous constitution, febrile reaction, and other causes for excited cardiac action, etc., on the side of functional murmur; and rheumatism, Bright's disease, fatty and atheromatous change, etc., on the side of structural murmur.

Of definite significance are indications, or not, outside of murmur, of coincident organic heart disease. Murmur in the presence of otherwise evident heart disease—be it hypertrophy, dilatation, fatty change or other—is in all cases to be counted organic and this even though the orifice at which the murmur is generated appear normal. Murmur, in the absence of otherwise evident heart disease, is obviously the murmur whose organic or inorganic character we are called upon to determine.

For unquestionably there is a large class of organic cases in which *constant* murmur is the only definite evidence of the change at the heart; and we have reason to believe that this class is supplemented with a much smaller class, in which *inconstant* murmur developed, as before alluded to, under excited cardiac action, is the only indication of such lesion. To distinguish the murmur of this class as organic, and the murmur of the other large class in hearts free from structural change as inorganic, is the vital question before us.

As relates to the sounds of the heart: In the presence of inorganic murmur, the valves being perfect and acted upon by the agencies that produce the murmur, they give forth only their normal or somewhat intensified sound. In the presence of organic murmur, the valves being more or less impaired in the great majority of cases, the heart sounds are variously modified, usually in marked degree, not unfrequently one or the other sound being completely obliterated, and murmur taking its place.

Then, if, in a given case, the sounds of the heart are normal, or only intensified, the probability is great that the pertaining murmur results from functional cause alone. But if the sounds are abnormally modified other than regularly intensified, the pertaining murmur results from organic change.

In regard to the bearing of *time* in the heart's revolution, at which the murmur is observed: Inorganic murmurs are invariably systolic; organic are systolic, pre-systolic, and diastolic. So the question has to do alone with murmurs of systolic time. The rhythm is easily determined, and in this we have attained a great simplification.

The position of the murmur as related to the base or apex of the heart is of highest import. Inorganic murmurs are basic, with few, if any exceptions. We may positively exclude

apex murmurs, which show any continuance, from the inorganic class. And our own experience has not furnished an unequivocal example of functional apex murmur. But the difficulty is to decide sometimes between apex and *left* basic murmur. Murmur from the pulmonic orifice heard at its more usual site, the third left cartilage, is not far removed from murmur from the mitral valve heard at its usual site, near the left nipple, and when the pulmonic murmur appears, as not rarely happens, more to the left, it may easily be mistaken for murmur proceeding from the mitral valve. Moreover, confusion has arisen from the acceptation of functional murmur as originating at the mitral valve, and being located near the left base, rather than near the apex. Really, though, the points of distinction are in most cases sufficiently marked, and the comparatively few cases of serious difficulty can, with rare exceptions, be cleared up, by familiarity with, and attention to these points, including the history and concurrent circumstances bearing upon them.

We regard, then, inorganic murmurs as reduced practically to those of systolic time and basic site. The next step is to distinguish between basic murmurs that are functional and basic systolic murmurs that are organic. Murmur at the aortic area alone, or decidedly accentuated at that point, is usually organic. If it is harsh and propagated, as then likely to be, along the course of the vessel and to the back, it is certainly organic. On the other hand, murmur at the pulmonic area alone or accentuated at that point, is almost invariably inorganic. The reason for this diversity and main distinction, is plainly that structural change is common in the left endocardium and it is rare in the right.

We have now arrived at what we consider the most important point in the diagnosis of inorganic murmurs—namely, that murmurs truly located at the pulmonic area, arise from inorgan-

ic causes in the vast majority of instances. The exceptions are few, and sharply defined; aside from congenital malformation, pressure upon the pulmonary artery from pericardial exudation, from consolidation of the lung, from enlarged bronchial glands, from aneurismal or other tumor, comprise about all the exocardial causes of pulmonic murmur; and endocardial are so rare that, by common consent, they are ruled out. Such structural causation is ordinarily easy determined, and hence murmur due to it is readily eliminated from murmur of functional origin. Then if murmur is definitely located at the left base, the chances of its being other than functional are very remote. And the positive and relative frequency of murmur at the left base has been exhibited to us. We have seen how, in our experiments, murmur was produced by active exercise, in nearly one-third of the cases; and that in thirty of these thirty-three cases, the murmur presented alone or with accentuation at the left base, and in one case only was the murmur accentuated at the right base. Also we have seen how, in a large proportion of persons suffering under acute febrile movement, murmur was developed; and that, in them, it manifested usually at the pulmonary area alone, occasionally with accentuation here, and exceptionally with equal intensity at this and the aortic area, but in no instance at the aortic alone. Thus experience shows the pre-eminent frequency, both positive and relative, of systolic left basic murmur.

The fewer instances where systolic murmur is heard over the base without accentuation, at either the right or left area, may be organic or inorganic; and in these the diagnosis must be made independent of the distinctive aid derived from the position of the murmur as related to the right or left base. These are of the cases whose solution will require light from the many and various sources at our command. Happily the light may be sufficient.

Thus, we conclude the diagnosis between inorganic and organic cardiac murmurs is within our power, if we do but appreciate, rightly interpret, and improve the resources which science and experience place within our reach.

FUNCTIONS OF THE SPLEEN,

—BY—

S. S. SCOVILLE, M. D.

OF LEBANON, OHIO.

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Mr. President and Gentlemen:

To enter at length into the literature of the Spleen upon this occasion would be unprofitable, and would extend the report of your Committee far beyond reasonable limits. Nothing of the kind is intended. It shall be our aim to discuss, briefly, the more recent views respecting the offices of this seeming anomalous organ.

Perhaps there are but few questions in all the range of the natural sciences which have for so long a time tested the learning and ingenuity of man, as the one under consideration. Experiments reaching as far back, at least, as the days of Pliny, seem to show that an animal, even man, does very well when deprived of the spleen. Nevertheless, should it be demonstrated, beyond all doubt, that the removal of this organ does in no wise impair health, we are so accustomed to look for utility in all the works of nature that inquiry would not cease. And could it be shown conclusively that the absence of a spleen ac-

tually contributes to the health and endurance of man, as intimated in the writings of the above named historian, we are quite sure that the extirpation of this gland would soon become a hygienic measure of no trifling importance. And it would be strange indeed, if some quack did not make the discovery that the spleen was the seat of "all our woes;" and claim that in its removal, by a mode known only to himself, we would be striking at the very *core* of the whole matter—that is, at the core of the apple of which Eve partook in the Garden—and man would be restored to innocence and immortality. The old idea of the Spleen being the seat of the passions, would certainly lend plausibility to the discovery. Man might, as it would seem, enjoy an immunity from one sin or evil passion; for how could he, having no Spleen, "vent his Spleen," either upon himself, his fellow man, or his maker. But after all our quack would have some stubborn facts to contend with; for, with the lower animals at least, most furious wrath has followed a removal of the organ.

Of the various older theories, the one which regards the Spleen as a *diverticulum* to the circulation, appears the most plausible; and, perhaps, has had the greatest number of supporters. That it fulfils a useful purpose in this respect will not be denied; but from many considerations it cannot be claimed that this is the chief function of the Spleen, and for which it was specially ordained.

The view taken by Tiedemann and Gmelin, and supported, substantially, by Chaussier, which regarded the office of the Spleen as identical with that of the mesenteric and lymphatic glands, has much truth in its favor. But it was not until certain discoveries were made respecting the blood-corpuscles that proof of a similarity of function was furnished. That there is an intimate relation in certain work performed by the Spleen

and the other glands of the system, will be made apparent in the course of our remarks.

Not until more minute discoveries were made respecting the different constituents of the blood, and their relative quantity in the different veszels noted, was there any true light shed upon the problem before us. From these discoveries some concluded that the spleen prepared certain elements of the blood for the formation of bile in the liver. The almost sole office of the liver was thought to consist in manufacturing bile. Its glycogenic and other functions were scarcely known. That the Spleen, in its functions, is intimately associated with the liver, may be argued from pathological as well as physiological considerations. But it is to a different change upon the blood, or some of its elements, than the one referred to, that we are to direct our attention. The character and importance of this change, whatever it may be, we would conclude ought to be shown by observations upon the blood of animals deprived of the spleen; provided the examinations were made before a compensating work was set up in other organs. How far observations of this kind have been carried since microscopy has been advanced to its present state, we are not advised. A very decided change, however, upon some of the elements of the blood has long been noticed in certain pathological conditions of the gland. But unfortunately in most of these cases the general system, or some other organ, especially the liver, is implicated in the disease.

As it regards experiments made upon animals by extirpating the spleen, are we quite sure that the health is not impaired, as claimed, for instance, by Dupuytren with his twenty dogs; and that persons having no spleen, as stated by Dulaurens, Kerchring, Baillie and others, enjoy good health? The fact of there being no *apparent* effects upon the health in these, and other

cases reported, by no means settles the question; especially when we bear in mind the wonderful power of adaptation which the system has to new conditions arising from injuries, disease, climate, &c. View the question as we may, the *argumentum inexorabilis* still remains, that the Spleen serves some useful purpose in all animals which possess it. We might however be made to yield, should Darwinism cast the organ off as rudimental rubbish as it claims to have done with the *Appendix vermiformis.*

When our attention is directed to the change produced upon the blood which passes through the spleen, beyond that which seems to be necessary for its nutrition, we are forced to admit that a direct influence, of some kind, is exerted by this gland upon the blood; and the inquiry arises respecting its true character. As before intimated, recent observations exclude the idea that this change is, to any great extent at least, connected with biliary secretion. From various considerations which we now propose to notice, we are led to look upon the change as being intimately connected with the blood-corpuscles. However, it will not be pretended, in the present state of our knowledge, that the exact or specific relation can be determined with absolute certainty.

When we bear in mind that nearly one-half of the mass of human blood is composed of these corpuscles or cells; and which are essential to every process connected with all living forms; it is of great interest to know *how, when* and *where* these wonderful bodies originate. However, to enquire *how* a cell originates without the conception of a pre-existing one, is almost unthinkable. So wonderful and mighty are these little bodies in all their works, that they claim our profound attention. Could we but unlock the door to a single cell, as we find it fully formed, and learn *all* of its simple though wonderful history, we would possess a key to all the richly adorned upper

and larger chambers connected with the most complicated orders of animal life,—even the magnificent "Temple of the human body," to its very dome, might be made to give up its mysteries.

In considering the relation of the Spleen to the corpuscles of the blood, it is important first to inquire whether the work performed by this organ is of a *destructive* or a *constructive* character. Some histologists, and prominent among them may be found Kolliker and Ecker, regard the Spleen as a special organ where the red corpuscles, which can serve the system no longer, are destroyed. That the red cells are, to some extent, destroyed or disintegrated in this gland is quite conclusive, as noticed in the formation of pigment; but to suppose an organ like this to be formed and set apart for the continual destruction of a large amount of matter, without being provided with an excretory duct for its removal from the circulation, is out of harmony with our conceptions of the plan of the animal economy, and with all that is known respecting the history of the blood corpuscles themselves.

There is little known, with certainty, concerning the age or permanency of the corpuscles. Dalton says: "There is no reason for believing that the red globules of the blood are any less permanent, as anatomical forms, than the muscular fibres or the nervous filaments." * * * "They do not, so far as we know, perish bodily in any part of the circulation."

Some light has been thrown upon this question by the discovery of the migratory character of the white or colorless corpuscles, and the relation of blood-cells to the solid tissues. And especially must we recognize the fact, that the whole animal body, at least every organized portion, is composed of cells or their derivatives. This grand discovery, first clearly elucidated by Schwann, indicates a greater permanency in cell-life than has

generally been supposed; for it leads to the conclusion that the ultimate destiny of the blood corpuscles is to enter into and form tissue of some kind; no difference how many changes they may have undergone. Thus they acquire a stability; being subjected only to those changes involved in the nutritive process. If, however, in the metamorphosis of tissue, which is constantly taking place, there is a disintegration of old cells with new ones supplying their places, we need not look for any special organ or locality for cell destruction. But Dalton observes: "It is not the *anatomical forms*, anywhere, which undergo destruction and renovation in the nutritive process; but *only the proximate principles of which they are composed.*" The anatomical forms, here referred to, are the corpuscles. Therefore, admitting the correctness of this author, we are to regard the change as simply a renovation or rejuvenescence of the cells. But to attribute such a permanency as this to these bodies, is at variance with many well recognized facts, and with the generally received hypothesis respecting the maintenance of animal life. With all the higher orders of animals, life seems to be maintained by the continual expenditure or destruction of the elements of which they are composed. And again, the rapid genesis or multiplication of cells, which is taking place in the animal body, is not consonant with the idea of great permanency, as we may learn from analogy.

The white cells are rapidly and constantly being added to the circulation from the chyle, with a continual multiplication of their numbers in various organs and tissues. In view of this incessant crowding, so to speak, of the system with these bodies, would we not expect a corresponding disintegration to be taking place; especially with the adult where the processes of growth do not exceed those of decay? From these, and other considerations which might be urged, we are justified in concluding

that the blood-cells are being rapidly disintegrated; no difference whether they have existed for a longer or a shorter period; and that this destruction is taking place in every organ and tissue of the body; hence the Spleen can not be Specially designed to perform this office. We may add that the great weight of authority is opposed to the view which regards the Spleen as being a special seat for the disintegration of blood corpuscles.

In considering the opposite view, which regards the functions of the spleen as of a formative or constructive character, we meet with authority which, in our opinion, goes far beyond what the facts warrant. Gerlach and Shaffner, especially the former, have endeavored to show that the Spleen is the chief factory for the blood cells. This tendency to magnify the office of this organ either as a *producer* or a *destroyer* of corpuscles, has invited opposition to the theory respecting the relation of this gland to the blood cells, that might have been avoided. With all due reverence for these distinguished histologists, and with a full appreciation of their indefatigable labors, we venture to say that they are not entirely free from faults too common to all scientific investigators. When an important discovery is made, a super-heated enthusiasm often carries them far beyond what the facts justify. Thus, has the progress of science, in all its departments, been retarded.

In asking the question as to where the blood corpuscles are formed, we had better first ask where they are *not* formed. That the Spleen has a full share in this cell-work, is all that we expect to show. The observations of Hirt, respecting the corpuscles found in the splenic vessels, go to prove that quantities of colorless cells have their origin in the Spleen. He found in the splenic vein the proportion of white corpuscles to the red, to be 1:60; in the artery there was 1:2,260. True, it may be argued,

that this disproportion was caused by a destruction in the Spleen of red cells. But Funke seems to settle the question. He found *more* white corpuscles in the splenic vein than in any other vessel. We do not understand him as meaning that the number of colorless cells was *relatively* greater in this vessel, but that it was actually richer in these bodies. Hirt found in the hepatic vein, the proportion of white cells to the red to be 1:170; in the portal vein, 1:740. This shows that the liver as well as the Spleen participates in white cell-formation.

In viewing the anatomical structure of the Spleen we see everywhere evidence that its office is of a formative character, that it is concerned in the evolution or development of cells. Its great vascularity, with a plentiful distribution, throughout its structure, of morphological elements eminently fit it for this work. Adopting the language of Muller: "The parenchyma of the malpighian bodies is formed of cells and a retiform intermediate substance; the cells agree in their character with the lymph corpuscles of the several animals, and they are constantly found in various stages of development, some being smaller, with a single nucleus, they are capable of executing amœboid movements and are usually more densely crowded at the periphery of the malpighian bodies than at their centre." He adds: "The tissue of the splenic pulp is composed of cells and of an intercellular substance. The former resemble the lymph corpuscles of the animal, and constantly appear as small uninucleated and larger multinucleated cells, furnishing evidence of the occurrence of continuous processes of new formation."

If certain *functions* must necessarily accompany certain *structures*: or in other words if the structure of an organ indicates its physiological action, we cannot assign any work to the Spleen with as much certainty as that of cell-development. The conditions most emphatically favor active formative processes.

But from various considerations, we are to exclude the idea that the colorless corpuscles are not formed abundantly in other localities in the system. And in entering briefly into the origin of the blood-cells, we shall discover that entirely too great a share in this work has been attributed to the Spleen.

In studying embryonic life, we might select the liver as the chief laboratory for blood corpuscles; as this organ soon attains a large size, and gives unmistakable evidence of active work in cell formation. But we have positive evidence that the genesis of blood corpuscles in nowise depends upon special organs. In embryonic life, their formation and multiplication may be noticed as contemporaneous with the origin of the blood vessels themselves. As before intimated, the chyle is the great source of the corpuscles in the fully developed animal. All the lymphatic glands furnish evidence of being concerned in the production of white cells. It has been shown, for instance, that the vasa efferentia contain more of these bodies than the vasa afferentia. To account for this disproportion, it has been suggested that a migration of corpuscles to the efferent vessel has furnished the excess. This is mere conjecture without proof of any kind.

There is an important fact to be noticed, which of itself, goes far to prove that in nearly all the organs and tissues of the body, blood cells are formed. It has been shown by Mayen, Hering, Nasse and others, that arterial blood contains fewer cells than venous. Where, and how, the number of corpuscles are diminished by the change of the blood from venous to arterial, it is unnecessary to inquire.

Probably in the main blood currents there is comparatively little activity in cell formation. These bodies may be regarded as in a more passive condition when being borne rapidly on in the circulation. Their shape at least, is more uniform. It is

when their onward course is retarded in the various organs and tissues that they exhibit such a variety of forms, and those peculiar amœboid movements. It is when they exhibit the greatest activtiy, judging from certain experiments which have been made, that they imbibe nourishment preparatory to some morphological change or multiplication. The legitimate office of the blood vessels proper, of the animal body, is simply to cause "variations in the distribution of the nutritious fluid." And as the blood hastens on *en masse*, as it were, in the main currents, its constituents seem more fixed or stable in their relations. It is in such organs, for instance, as the Spleen and liver where the circulation becomes exceedingly slow, and where the current breaks up, so to speak, into innumerable sub-divisions, affording an approximation of the elements of the blood with new elements, that we would look for active morphological changes. Besides, in these organs the blood is subjected to a maximum temperature—a temperature, if we may judge from experiments with different cells—favorable to the activity, growth and multiplication of blood corpuscles.

In relation to the question of the genesis of the blood corpuscles, we might express the matter in general terms, by saying, that we are justified in the conclusion that cell formation in the animal system, is commensurate with the distribution of those protoplasmic compounds in which resides that *vis vitalis* which is essential to the origin and growth of all organized forms from a simple cell to a fully developed human being.

If a cell may be regarded as a "*living independent being*," though it should consist, in its most simple form, of a "little mass of sarcode or protoplasm," we would naturally ascribe to it capabilities for growth, propagation and transformation, such as are seen in low forms where there can be no dispute as to their being *living animals*. Several modes of cell multiplication have

been distinctly recognized, viz: by *fission, gemmation,* and an *endogenous* process. The mode of propagation may depend upon the character of the cell—that is upon the morphological stage or transformtion it has reached. Or, it may be owing to how it is *conditioned.* And should we consider *conjugation* essential to cell multiplication (a subject which has claimed the attention of Hermann and others) by either or all of these modes, we might conceive the spleen to be specially adapted to all the requirements of cell evolution.

The question as to whether the colorless corpuscles are distinct bodies from the red, has engaged the serious attention of all histologists, and may be regarded as pertinent to the subject under consideration. The weight of authority favors the doctrine that the white cells are changed into the red. Paget, and Wharton Jones, with remarkable clearness, have pointed out the transition stages. Lehman, H. Muller and Gerlach concur in this opinion. Von Recklinghausen and Golubew have shown, conclusively that red cells are formed at the expense of the white; Erb, and we believe Neumann, describe cells which they regard as transitional between the white and the red.

The division or classification of cells or corpuscles, such as lymph, pus, white, red, &c., we have reason to believe, mark, at the most but different stages of growth or change through which the primordial cell has passed. From observations of Max Schultz, Zimmerman and others, there are in the blood certain protoplasmic forms in granules, which are spoken of by Rollett as elementary corpuscles. Such bodies have also been noticed in the chyle. These, it is reasonable to suppose, represent a primitive form, from which the white corpuscles proper, are derived. Now, from what has been said respecting the anatomical character of the Spleen, and the active formative processes which have been observed as taking place in this or-

gan, it is but reasonable to conclude that the Spleen affords a special locality for the development of these primitive bodies into fully formed white corpuscles.

If there exists this relation of the Spleen to the blood corpuscles, which we have endeavored to show; and if it is chiefly through the agency of the cells that nutrition is maintained, we would expect to find the nutritive process interfered with in splenic diseases; or where the organ had been removed. This is unquestionably the case; for we know that where there is a deficiency of corpuscles; or where the normal proportion of white cells to the red is materially changed, from any cause, nutrition is sadly affected. And it may be shown that the disease of no organ affects this relation more readily than the Spleen. This relation of the organ to nutrition, may furnish an explanation to the often observed fact respecting the voracious appetites of animals that have been deprived of the Spleen. They are starving notwithstanding plenty of food is taken and well digested. And doubtless the usual number of chyliferous corpuscles enter the circulation. But an important laboratory for cell multiplication, or cell transformation, has been removed, and consequently the system is not nourished with the ordinary amount of food. And it requires some time for other organs to compensate in cell production for the loss sustained.

Instead then of regarding the Spleen as simply an equalizer of the circulation, it may be considered as keeping in equilibrium only certain nutritious elements of the blood.

In relation to this matter, Carpenter says: "The correspondence in the amount of the colorless parenchyma of the Spleen (and especially of its Malpighian corpuscles) with the general state of nutrition of the animal, its regular increase (in well fed animals) near the completion of the digestive process, and its gradual diminution in the subsequent interval, seems to indicate

that the Spleen, like the Thymus of the young animal, is a storehouse of nutritive material, which may be drawn upon according to the requirements of the system, just as the fat of the body is a storehouse of combustive substance."

If Vogel is correct, (he is supported by Lehmann and others) that all albumen passes through a transition stage, becoming fibrin "before it can be converted into cells and the elements of tissues," we have additional evidence that the Spleen is a laboratory for blood corpuscles. For it has been shown that the blood of the splenic vein contains but a small amount of fibrin. Funke, in his examinations, found its presence in but few cases. The almost entire absence of fibrin in the hepatic vein has also been proven. It would seem then from these facts that colorless corpuscles are formed in the Spleen and Liver at the expense of fibrin. Globulin, which is found with certainty only in the blood corpuscles or other similar bodies, we have reason to believe, is not an immediate product of albumen. According to Lehmann, globulin contains a "little less carbon and sulphur, but rather more oxygen than albumen." Here the chemical change seems but slight; but we should bear in mind how inadequate chemistry is, in determining the true relation of this class of compounds. We are aware that some regard globulin as representing a transition state between albumen and fibrin. This is very improbable; for all the facts indicate that globulin represents a more complete or finished state,—a state or condition, fitted for immediate nutrition. This view of the matter is supported by the following language from Lehmann: "We shall not be deviating very widely from the truth, if we regard the blood-cells as organs, that is to say, as laboratories, in which the individual constituents of the plasma are prepared for the higher functions of aiding in the formation and reproduction of the tissues."

The conclusions at which we have arrived respecting the Functions of the Spleen, may be briefly stated as follows:

The Spleen in its work, is directly related to certain elements of the blood—the corpuscles. This work is of a formative or constructive character; consisting in the development or multiplication of white corpuscles, from which the red cells are to be derived.

In consequence of this relation to the blood corpuscles, the Spleen may be regarded as intimately connected with nutrition; assisting in the maintenance of an equilibrium of nutrient material which is immediately concerned in the formation and reproduction of the tissues.

The office of the Spleen, important as it may be in producing blood-cells, has been overestimated. The work of this organ is shared by numerous other glands, especially the Liver, with which it is more intimately associated in cell-development than any other organ.

REPORT

—ON—

URINALYSIS,

—BY—

ISAAC W. RUSSELL, M. D.

MT. VERNON, O.

URINALYSIS,

—BY—

ISAAC W. RUSSELL, M. D.,

MT. VERNON, OHIO.

As a part of the science of modern chemistry, Urinalysis came into existence about the beginning of the seventeenth century, a result of the labors of the Alchemists.

The earliest recorded examinations, I am able to find, are those made by Van Helmont, during the years of the Inquisition, for the purpose of ascertaining the origin of calculi.

This essay of Van Helmont was shortly followed by others from German, English and French chemists in quick succession until, at the present time, the subject under consideration is probably more fully written-up than any other department of Physiological or Pathological chemistry.

The hand-books and treatises are so full of directions, clear and explicit, for the application of particular tests, that I shall occupy but little of your time in their consideration, but shall rather mention a few of the difficulties to be met and overcome in the course of urinary examinations, as well as some of the benefits to be derived from the continued employment of Urinalysis by the general practitioner.

Is there sufficient which is practicable and tangible about this

matter to entitle Urinalysis a place by the side of the other means employed by the busy practitioner of medicine in the diagnosis and prognosis of disease? Do not the tests employed occupy so much time and require such delicacy in their application as to place them outside the domain of the physician and within that of the professional chemist?

These are questions which, in one form or another, are continually arising in our minds; and which it is the design of this paper in part to answer.

The purposes in the examination of the kidney excretion are, (*a*) To ascertain the condition of the urinary apparatus; (*b*) To determine the character of the metamorphoses of tissue which give rise to products in the urinary excretion; (*c*) To discover and verify the action of special remedies. These singly or collectively are the objects for which almost every examination is undertaken.

The means necessary to the success of Urinalysis are—(*a*) Reliable, graduated vessels, tubes, burettes, etc. for the reception and delivery of the excretion and test solutions. (*b*) Reagents of definite chemical strength and known purity for the performance of the simple tests, and for the manufacture of standard solutions. (*c*) On the part of the physician, a moderate acquaintance with chemical processes sufficient to determine the cessation of certain decompositions and reactions.

To the conscientious desire of the Physiologist and Pathologist to ascertain the hidden changes going on within the body, both in health and disease, we owe the development and present status of this department of organic chemistry.

The labors of the Physiologist and Pathologist have been, mutually dependent to a considerable degree. The of the urinary excretion exists only as its physiologi- on is known. The physiological value of the excre-

tion is partly comprehended by the knowledge of alterations occurring in disease.

At all times and under all circumstances there is a molecular wear and waste going on within the body producing substances which are discharged by the lungs, skin, bowels, and kidneys. The difficulty with which the first two, the excretions of the lungs and skin, are obtained, and the fact that the fœces contain much beside the products of wear and waste of the organism, render these unfit for the purpose of ascertaining the changes going on within the system. On the other hand the urine is easily collected in sufficient quantity and has a more definite composition, being merely an aqueous solution or mixture of excrementitious substances.

The decision, how far alterations in the quantity or quality are due to physiological changes or to morbid processes, is a difficulty which we often encounter. No distinct, definite line can be drawn to separate morbid from healthy action, and I would not maintain that the constituents of this excretion from the kidney hold a constant, definite relation to one another, yet having in view the weight of the body, the quality and quantity of fluid ingested, condition of the system derived from other sources, with the valuable statistical analysis already made before us, we are enabled to say somewhat positively that *this* is morbid and *that* healthy urine.

The urinary elements vary, *cœteris paribus*, in accordance with changes taken place throughout the general circulation; they are indicative of systemic rather than local metamorphosis; of constitutional health or disease rather than local kidney affection.

In disease of the kidney itself we find upon examination casts, albumen with or without blood, pus, etc., and if these are *all* absent we are thrown back upon conditions of general meta-

morphosis going on in the body,—the source of excrementitious products.

It is not disease of the kidney *per se* that causes excess of phosphates, urea, or the like, or that occasions the presence of sugar; it is back of and beyond the kidney, and to be looked for in the process of repair and waste of the tissues.

Another difficulty which the medical man encounters, and it is frequently the source of error, arises from the improper collection of the urine to be examined. A portion of urine is requested for examination; the uninstructed patient sends a few ounces passed perhaps twenty-four hours before, probably more or less decomposed, containing foreign matter, delivered in a vial uncleaned of its late contents, which may have been an acid, alkali or oily substance, and what, I ask, can be done with such a specimen. It *may* be that you are enabled to detect the presence or absence of such substances as albumen, sugar, or bile, yet even if so far doubtfully fortunate, it will be impossible to go further; the reaction, the specific gravity, the quantitative analysis or the general knowledge of the specimen before you can never be obtained. In order that a satisfactory examination can be made, the patient should be directed to collect the total amount discharged during twenty-four consecutive hours, and after carefully estimating the quantity, at least eight ounces of this mixed urine should be poured into a bottle which has been carefully cleansed and afterward rinsed with water alone. Perhaps in the majority of instances the specific gravity is determined by the urinometer. And here again we encounter obstacles, and erroneous results are not unfrequently obtained.

(*a*) If the urinometer have particles of foreign matter clinging to it, as it may have by being laid away when wet. (*b*) If its surface be oily, or, from any cause, unclean. (*c*) If the consistence of the urine be mucilaginous or glutinous, as is often the cir-

cumstance in albuminous and glycogenic cases. (*d*) If there be much sediment, (*e*) or if the vessel containing the urine be narrow, as a test tube, this method with the urinometer will prove unreliable and fallacious.

It will also be found that the instruments will vary among themselves, they, when compared, will not stand at the same point in the same liquid and under the same circumstances.

We are led to look upon them with suspicion at any rate, when we see the printing upon the scale. The common instrument is graded in spaces of two degrees from 0 to 60°, and opposite the 0 we find "W," indicating the specific gravity of water; this is useless and probably harmless. Looking down the scale we see opposite 10° and 20°, the letters "H" and "S," initials of the words "Healthy Standard," conveying the idea, that should the surface of the urine appear between these letters, the specimen is normal, that the condition of the urine is at the standard of health.

The well known facts however are, that, on the one hand, many collections having a greater density than 20° will be found normal; while, on the other hand, those typically and decidedly abnormal will have a sp. gr. *within* the range of this so-designated healthy standard. Look on a little farther, and at the figure 30°, and below will be found the word DIABETES, purporting to indicate the presence of sugar.

We not unfrequently find urine rendered as heavy as, it may be heavier, than 30°, by the diminution of the water or the augmentation of normal solid constituents in which no *sugar* can be detected, if by the printed word "diabetes," the saccharine variety of that disease is implied.

What would we think of a manufacturer of medical thermometers placing the names of particular diseases opposite certain degrees upon his instruments, because such a degree indi-

cates a temperature at some time, it may be generally, existing in the given disease.

Such marking or *dis*figuring upon a theromometer would be, and upon the urinometer *is* the manifestation of a bad deception or worse ignorance on the part of the instrument-maker and the source of disappointment and of error to the credulous practitioner. Except in the case of continued disease when the particular condition and circumstances of the patient are known, a portion of the mixed urine of twenty-four hours should be collected for the purpose of determining the sp. gr.

The means of accomplishing this object should be, not the urinometer, but the sp. gr. bottle, capable of containing exactly 1,000 grains, when the stopper is in, of distilled water at the temperature of 60° F.—its counterpoise and a moderately delicate balance. The bottle is filled with urine and placed upon an arm of the balance and the counterpoise being 1,000 grains plus the weight of the empty bottle and stopper—upon the other arm, and whatever weight additional, *in grains*, is necessary to counterbalance the urine will represent the sp. gr. *in degrees*.

This method is free from the several sources of error mentioned, gives accurate results with the corrections for temperature, and with little practice becomes easy of application.

Any one who pursues urinalysis will frequently encounter difficulty and fail in his processes if he uses common commercial articles as reagents, etc. This is especially true of the use of the blue vitriol of the shops in the place of chemically pure sulphate of copper; in the use of the solution made of ordinary stick potash which soon becomes turbid and useless; in the use of impure acids, particularly nitric; a poor quality of yeast in the fermentation test, and an inferior quality of litmus paper.

Only *pure* chemicals should be used; less of the article itself is required to accomplish the test; less time is occupied in mak-

ing the test; unsatisfactory reactions and incorrect results are avoided, or at least not so constantly occurring.

In reference to the modes of applying the particular tests, nothing can be said in a paper of the length of the one here offered. The quantitative method by means of the standard solutions, should often be followed by the practitioner. In testing for sugar I have found the modification of Trommer's test by what is known as Fehling's solution much more satisfactory than either the Trommer test itself, Moon's test or the yeast test. The trials of Roberts' "differential density method," have proven unsatisfactory, but the failures may have been due to the kind of yeast used.

The *combined* heat and nitric acid tests for albumen are, I think, preferable to all others. The manner of applying this test found most reliable is the following:

Two test tubes, each one-third full of urine, are taken, to the one, at the upper portion of the liquid, heat is carefully applied until the boiling point is reached and then pure nitric acid is added equal in amount to one-sixth or one-fourth the bulk of the urine in the tube, allowing the acid to run slowly down the side of the tube. Placing this aside, the other tube one-third full of urine is taken and the preceding process merely reversed, adding the nitric acid first and afterward applying the heat. If, in neither tube, turbidity or a coagulum be occasioned, for all clinical purposes, albumen may be considered absent. Much has been written upon the subject of tests for albumen—that the reaction of the urine examined, that an excess of urea or uric acid, or the presence of organic substances, such as sugar, that the nature or variety of the albumen—that the amount of acid added, modify the result or give a negative result, yet in my opinion none of the other tests, (by the use of chloroform, absolute alcohol, vegeta-

ble acids or mineral salts) for accuracy are to be compared with the heat and nitric acid test. In the majority of instances, especially when turbidity is noticed or a deposit exists, a microscopic examination should be made, for the purpose of further investigation and for the confirmation of chemical tests. In reference to microscopic examination, I wish to make the remark, that in general terms we may rely upon the microscope for the diagnosis of certain diseases confined within the genito-urinary tract, while a physical and chemical examination is the more important in constitutional disorders or disease remote from the kidney.

The advantages accruing to the general practitioner from pursuing this branch of our science are varied. It is the means of keeping fresh in our minds, and increasing whatever knowledge of chemistry we may possess. It furnishes opportunities for interesting students in the study of chemistry, a difficulty which perhaps every preceptor has encountered. The apparatus and reagents as well as the scientific processes employed in Urinalysis are the means of, and incentives to, physiological, toxicological and other chemical investigations which are sources of knowledge very much neglected by the general practitioner of medicine. In employing chemical examinations of the urine, we are afforded opportunities for ascertaining and verifying the therapeutical effect of certain medicines, as alkalies in rheumatism and antilithics in calculous affections. If it be a fact that diseases as a rule are more or less amenable to treatment, according to their shorter or longer duration, then because we have in Urinalysis means of detecting the premonitory and earlier stages of disease not derived from other sources, it follows in the line of obligation that the positive and early diagnoses offered by the examination of this excretion are not to be neglected by any one undertaking the treatment of such disorders as retention or suppression of the bile, formation of calculi, Bright's disease, or diabetes.

A New Amputation Through the Foot,

—BY—

S. F. FORBES, M. D.,

TOLEDO, O.

A New Amputation Through the Foot,

—BY—

S. F. FORBES, M. D.,

TOLEDO, O.

Mr. President and Gentlemen:

Probably every surgeon who has performed an amputation through the foot will agree that these operations in their mechanical execution are among the most difficult of the amputations performed on the human subject. There is a tradition which I have heard, that one of the most celebrated European surgeons was once, over half an hour making Chopart's operation.

The casualties of army service, railroad accidents, frost bites, and other accidents in civil life, have brought to my notice many cases requiring amputation through the foot; and I can assure you, that notwithstanding I have made very many of these operations, I always feel, when performing them, as if I was bungling, awkward and lengthy in their execution.

Partly from design and partly by accident I have hit upon an operation which may very properly, I believe, take the place of both Hey's and Chopart's operations. After having done this operation a number of times I find it much easier of execution than either of the last named operations; and while it

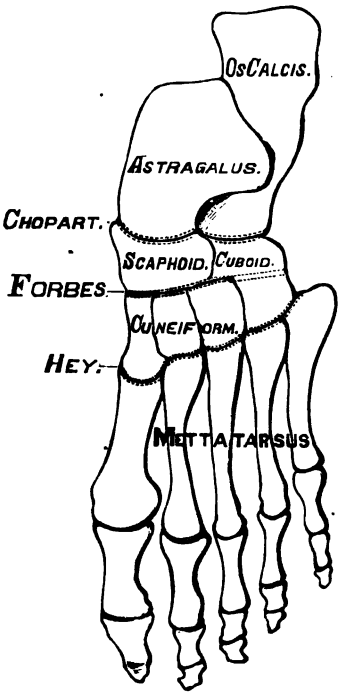
leaves a stump quite as useful as that resulting from Hey's, it gives a much better stump than results after Chopart's operation

It is always practicable where Hey's is, and almost always can be done where Chopart's can.

I do not propose to enter into any learned disquisition upon these operations, but briefly to call your attention to what I have termed a new operation, (as I have seen nowhere any mention of it) and to express the hope that when any of you are called upon hereafter to perform amputation through the tarsus you will give this method a trial.

The steps of this operation are briefly as follows: The flaps being made as in Chopart's operation, that is by an anterior and posterior flap, one horn of which should commence on the inner side of the foot opposite the tubercle of the scaphoid bone and the other terminate on the outer border or tubercle of the cuboid, and the flaps, being well reflected back, the knife, a stout, straight bistoury, should be entered between the scaphoid behind and the internal cuneiform bone in front and carried outward between the cuneiform bones and the scaphoid until the cuboid is reached. Twisting the foot well outward with the left hand of the operator will facilitate the movement of the knife along the articulations mentioned. Having arrived at the cuboid the knife should give place to the saw, when the cuboid should be sawn squarely across and the operation is completed. Should any difficulty be experienced in passing the knife along the external cuneiform the saw can at once be resorted to, and any portion of this bone which may be left in the stump can readily be dissected out.

In the foregoing I have presumed that both flaps have been made before the division of the bones is begun. If the operator prefers, only the anterior flap need be first made, but the in-


OsCalcis.
Astragalus.
Chopart.
Scaphoid.
Cuboid.
Forbes.
Cuneiform.
Hey.
Metatarsus

cision for this, in this case, should be carried well outwards over and down on the outside of the foot so that the saw should not engage the soft parts in that vicinity while the division of the cuboid is going on. The posterior flap can now be made as in Chopart's operation from the sole of the foot.

In Chopart's operation the difficulty of execution is mainly in consequence of the very deep concavity of the scaphoid bone behind, whereas in the operation I am describing the operator meets only its almost plane front surface.

By examining the bones of the foot it will be seen that where the scaphoid and a portion of the cuboid is left in the stump (as in this operation I am describing) each bone has a bold prominence or tubercle on its under surface which is of great service to the patient in walking ever after, a point not to be lost sight of by the surgeon.

The claims of this operation over Hey's and Chopart's are that it is more easily performed than either of them, that the stump is quite as good as that left after Hey's and much better for the purpose of walking than follows Chopart's operation.

I hope I may be pardoned for trespassing a moment on your time, while I speak of flaps and treatment of the limb after these operatinos. The flaps are most conveniently and best made from the dorsal and plantar surfaces of the foot. But sometimes these portions are almost entirely destroyed as in gunshot wounds where the muzzle of the gun was resting on the instep at the time of explosion. In such cases I have made very successful coverings for the stump from one or both of the lateral surfaces of the foot. In other cases, from the plantar or dorsal surface only, and occasionally from shreds and patches obtained from anywhere in the vicinity. And in still other instances I have got along with scarcely no flaps at all, in consequence of sloughing (which I had anticipated owing to injury)

and had granulation and cicitrization complete the work in due time in a very satisfactory manner. In a word, I would sacrifice just as little of the bony column—a permanent and necessary structure for future use—to the temporary want of covering, as the circumstances would allow, especially in young and healthy subjects.

By proper treatment of the limb after any of these operations through the tarsus, a better result will be obtained than if such treatment be neglected. The patient should lie upon either side with the limb flexed both at the hip and knee, and as often as may be, upon his back with his knee bent and well elevated with the heel sustained upon quite a firm pillow. This position is a natural and easy one and serves the double purpose of keeping the heel well forward, and affords a change of position to the patient.

This idea of keeping the heel well forward should not be lost sight of as soon as the healing of the wound is accomplished, but for three or six months after, the patient should wear a splint, which I believe to be of incalculable advantage to him in his future life. In cases where the retraction of the heel is very difficult to overcome the tendo-Achillis might properly be divided.

During the last few years after all of these operations through the tarsus and before the patient begins to go upon his stump, I have had prepared a straight splint of hickory wood, hollowed slightly to receive the heel at one end and fitting the calf neatly above, being somewhat elastic and padded. Then after snugly bandaging the stump and leg, I apply the splint behind the leg, with the heel well brought forward, as firmly as the patient can bear it. Over this a sock may be drawn and with any kind of a shoe the patient may begin gradually to go about. Of course the splint should be removed at night and reapplied again in the

morning. In a very few days the patient learns the assistance which the splint affords and will have it applied before he attempts to move around. From three to six months is the period which the splint is worn, when doubtless the structures in front of the ankle divided in the operation are sufficiently healed and solidified, and contraction having occurred so that they are able to antagonize completely the tendo achilles behind and the patient feeling this sense of security lays his splint aside. By this care in the after treatment I have seen most excellent results even where the foot has been divided behind the line of Chopart's operation; that is where portions of both the astralagus and os calcis, owing to injury, were of necessity removed.

In all these operations, whether Hey's, Chopart's, or the one I have been speaking of, relatively better results will follow if this care is taken in the after treatment. There are several persons in this vicinity upon whom the operation I have spoken of has been performed, when wearing an ordinary shoe with the front filled with cork, whose gait and carriage are so steady that it would be quite impossible for even a surgeon to say upon which limb the operation had been performed. These persons engage in railroading, farming, &c., without crutch or cane and with so little inconvenience, apparently, as not to notice that they have suffered any loss.

The points I seek to make in this paper are, that I propose an operation which is easier of execution than any other recognized amputation through the tarsus, that the stump resulting is as good as that left after Hey's operation, and that by reason of leaving the tubercles of the scaphoid and cuboid bones it is always better than the stump left after Chopart's operation; further, that the bony column behind the cuneiform bones should never be sacrificed to the demands of coverings except in cases of imperative necessity; and, lastly, that upon the treatment after

the operation depends in a great degree the future usefulness of the limb.

In conclusion I will express the hope that every surgeon will adopt, especially among the poor, an operation through the tarsus, though only the heel be left, in preference to amputation in the leg. The shock of these operations is much less than in amputation above the ankle, the healing generally quite as speedy, and the after expense and trouble of a false leg avoided.

A REPORT

—OF—

TWO CASES OF TRICHINOSIS,

—BY—

F. HOHLY, M. D.,

TOLEDO, O.

A REPORT OF TWO CASES OF TRICHINOSIS.

—BY—

F. HOHLY, M. D.,

TOLEDO, O.

Trichinosis being comparatively new in this country, and the profession having had but few opportunities to observe it, I have thought it might interest many to hear a report of two cases that occurred in my practice here.

On the 27th day of February, 1870, I was called to see Mr. F. Miller, aged 24 years, who had been sick about one week. He ascribed his illness to a severe cold due to exposure several days before my visit, but said, that for a few days prior to the attack of cold he had felt very tired all over his body, especially in his arms, legs and buttocks, and that this tired feeling had gradually increased to pain. During this time he had had diarrhœa, which though quite severe. had stopped spontaneously.

At the time of my visit he complained chiefly of pains in the muscles of the arms and legs, (none in the joints). He said the muscles of the calves of his legs were swollen and tender. There was no pain while lying quietly in bed, but the slightest attempt to change his position at once caused suffering. He complained that his tendons were becoming too short and hoped

they would not be contracted permanently. He could not straighten his arms. The tongue was clean in front, only slightly coated posteriorly, and moist. His appetite was fair but thirst constant—no headache. Sleeplessness for several days Pulse frequent, about 120, moderately full and slightly irregular. He did not complain of fever or heat. He had an almost incessant dry, hacking cough, without expectoration. Respiration was somewhat heavy, impeded, but not complained of. Auscultation revealed nothing abnormal in the condition of the lungs. The skin was always moist, frequently bathed with copious perspiration. There was backache, secretion and excretion of urine, natural and regular.

Ordered—2 doses of calomel, 8 grains each, to be followed by castor oil and morphia.

February 28.—Purgatives have acted well. Patient feels less pain in his limbs—probably due to the morphia. Had slept but little owing to the disturbance of the bowels by the purgative medicine; otherwise about the same. Would send for me again if required, after taking sulphate of quinine, which I ordered.

Same day Mrs. Miller, aged 22 years, nursing her first child, complained of illness, with slight *drawing* (?) pains along the back of her thighs, and of being tired. There was slight œdema of the face. Ordered a purgative.

March 1st. Mrs. Miller reported that her husband was getting worse, that he had much pain in his limbs and was swelling. I sent him several doses of morphia, and promised to see him next day. The œdema of Mrs. Miller's face was increased and she complained of severe pains in her limbs and of being very tired, so that she could scarcely walk.

March 2d.—Mr. M.—Pains the same as on previous visit. Œdema of the face, right foot and ankle. Muscles of the right

calf swolen, rigid and very tender. Right arm tender, especially the biceps muscle. Can not straighten either arm further than a right-angle. Cough much improved, nearly none. No headache. Tongue moist, slightly coated and getting yellowish. Appetite impaired. Thirst. Sweating continued. No sleep since I first saw him. Pulse frequent and not strong. Ordered Iodide of Potassium.

Mrs. M.—Œdema of the face disappeared. Pains the same. Appetite poor. Tongue clean and moist.

March 3d.—Mr. M.—About the same.

Mrs. M.—Pains increasing. Mr. M. here notified me that they would consult another practitioner, a "water doctor;" not a "Hydropathist" but a man who simply looks at the patient's urine, and sends his remedies without troubling himself to visit his victim of misplaced confidence. I told him I could not prevent him from acting his pleasure in that way, but that I would continue my visits as I believed their disease was Trichinosis.

March 7.—Mr. M.—Œdema of the face disappeared but that of the feet increased. Tongue still more coated. Pains and stiffness the same, and hoarseness with frequent pulse.

Mrs. M.—Pains increasing. Tongue clean. Pulse frequent.

March 8.—The condition of both patients the same, except an increase of œdema in Mrs. M.

March 10.—Dr. Schnetzler was called. As I had previously spoken to him in regard to the cases, he proposed to continue to attend with me, feeling much professional interest in the development and result of the disease.

Mr. M.—Œdema still increased. Pains and stiffness gone. Feels better. Pulse irregularly intermittent and small. Sometimes the third and sometimes the thirtieth pulsation failing. Constant sleeplessness. Constipated for five days past.

Mrs. M.—Can not now move from her bed. Face œdema-

tous. Pains in the limbs increasing, mostly in the calves. Constipated. Ordered laxatives for both patients.

March 11.—Little change in Mr. M. Pains less. Œdema increasing. Pulse same as before. A piece of the biceps flexor cubiti was removed and found to contain *a large number of trichinæ spiralis in a free, not yet incarcerated state.*

Mrs. M. Dry hacking cough. Ordered morphia and that the child should be weaned.

March 12.—Mr. M.—Thirst and sweating the same. Pains diminishing. Œdema extended to the thighs. Appetite fair. No sleep. Ordered digitalis and acetate of potash for diuretic effect.

Mrs. M.—Œdema of the feet commencing. Tongue clear. Cough less. Ordered carbolic acid and spirits of turpentine.

March 13.—About the same as yesterday. Mrs. M.'s tongue clearing. Appetite fair. Hoarseness the same.

March 14.—Mr. M.—Œdema increasing. Extended to the scrotum which has swollen to a considerable size since yesterday. Pains, stiffness and rigidity of muscles decreasing. Sweating and sleeplessness continue. Appetite good, pulse the same. Diuretic continued.

Mrs. M.—Considerable pain in the calves and thighs. Appetite good. Pulse 110. Œdema of limbs increasing.

March 15. Mr. M.—Tenderness diminished. Œdema increased. More disposition to cough, which is not so dry; but he says he cannot raise the tough phlegm. Otherwise same as yesterday.

Msr. M.—Nausea in consequence of medicine. Dry hacking cough still exists. Herpes labialis. Otherwise same. Discontinued previous remedies and ordered fluid extract of cinchona and aromatic sulphuric acid. Good nourishment and wine.

March 16.—Mr. M.—Œdema has reached the abdomen. No ascites. Otherwise the same.

March 17.—Mr. M.—Tenderness of muscles disappeared. Feels comfortable, but weak. Pulse yet intermittent, small, uneven and frequent.

Mrs. M.—No change.

March 18.—Mr. M. Does not sleep well. Pulse 104 to 112, intermittent. Appetite good. Œdema same.

Mrs. M. Pains in the limbs a little less. Pulse 112. Œdema not lessened.

March 19.—Mr. M.—Œdematous parts not so tense, but just as extensive. Considerable loose cough, ronchus, but lungs freely permeated by air.

Mrs. M.—Complains of roaring in the right ear; cough looser. Extract of cinchona discontinued.

March 20.—Mr. M.—Coughs less; bronchial secretion less. No medicine. Warm, dry applications to the legs.

Mrs. M.—Feels tolerably well. Ringing in the ear gone. Œdema in the right leg the same; less in the left. Warm, dry applications to the legs.

March 21.—*Mr. M.*—Very little cough. Pulse stronger, frequent and more regular, though still intermitting at long intervals. Œdema decreasing in the legs, but still reaches as high as the ribs and continues in the scrotum and prepuce. Sleeps without narcotic medicine.

Mrs. M.—Pains less; can stand on the left leg. Considerable cough. Œdema the same. The warm, dry applications mere not made. Again ordered.

March 22.—Mr. M.—Œdema of the prepuce increased; otherwise the same.

Mrs. M.—Improving.

March 23.—Mr. M.—Œdema increased, much cough and

ronchus. Sputa thick and greenish. Hoarse. Ordered Podophylin.

Mrs. M.—Free from pain. Œdema growing less. Feels well.

March 24.—Mr. M.—Has had 6 or 7 stools. Œdema less. Cough less.

March 25.—Mr. M.—Œdema still decreasing. Less cough.

Mrs. M.—Continues to improve.

March 27— Mr. M.—Improving rapidly. Pulse no longer intermits, is fuller and about 100. Cough not troublesome. No pain.

Mrs. M.—Improving, though more slowly, having some pain and œdema in right leg.

April 4.—Mr. M.—All œdema has disappeared, feels well, has no pain, limbs yet stiff obliging him to walk with crutches, though he can take a few steps without their aid. Complains of difficulty in planting his feet squarely on the floor on account of the shortness of the muscles of the calf.

Mrs. M. is performing her household duties; feels weak and the right leg is yet somewhat swollen.

April 22. Mr. M. is perfectly well, though weak. Mrs. M has still œdema of the right leg, otherwise she is well.

To sum up the symptoms of these cases and present them in a somewhat condensed form, we find that our attention is called first to those dependent

I. ON GASTRIC AND INTESTINAL DISTURBANCE.

The disorder commenced with severe diarrhœa in both patients. The accounts of the epidemics of this disease in Germany notice this symptom accompanied by slight gastric disturbance as the first indication of illness. In our patients the

diarrhœa, which lasted a few days, was followed by obstinate constipation that required cathartic medicines to overcome it.

The alvine dejections did not become regular until the general health of the patients began to improve. The appetite was but slightly impaired, and, except for a little while, it may be said to have been good. The tongue for four or five days only was covered by a yellowish coat; during the remainder of the sickness it was moist and clear.

II. WE NOTICE THE PAIN AND STIFFNESS OF THE MUSCLES.

These phenomena, in both cases, began in the muscles of the back and thighs and extended rapidly to all the voluntary muscles, being more remarkable in the muscles of the upper extremities. Both upper and lower extremities were excessively tender to the touch. While the patients were motionless on their beds they felt scarcely any pain, but when they stirred or were touched they suffered severely. This tenderness existed all over the region of the pectoral and maxillary muscles. This pain, stiffness and tenderness lasted about 18 days, the man suffering more than his wife.

III. THE RESPIRATORY ORGANS ATTRACT ATTENTION.

At my first visit *Mr. M.* had an incessant dry, hacking cough, without expectoration or pain. Indeed he did not complain of it at all. The lungs were perfectly free. No rattling in the bronchia. The respiration was heavy, somewhat impeded. The cough stopped soon, perhaps from effect of narcotics.

With Mrs. M. the cough came on about two weeks later, but was of the same character—dry and hacking. In the third week Mr M.'s cough returned accompanied by mucus rales, but

expectoration was difficult at first, becoming easier as the cough subsided gradually. In Mrs. M's case it took the same course. Mr. M's voice was hoarse as long as the cough continued.

IV. THE CIRCULATION.

In both patients the pulse was frequent from the beginning, about 120 per minute, soft and not very full. The pulse was especially remarkable in Mr. M. From the commencement of his attack I noticed a slight irregularity. The pulse was uneven but not intermittent. About the end of the second week it became intermittent. This condition lasted about ten days when the pulse gradually became stronger and less irregular. The frequency continued in both cases throughout the disease. Notwithstanding the frequent pulse, there was no complaint of febrile sensation or heat, but both complained of thirst during the two weeks while the disease was at its height.

V. THE BRAIN GAVE LITTLE INDICATION OF DISTURBANCE.

There was neither headache nor dizziness, only *Mr. M.* complained of constant sleeplessness that did not yield to narcotics. This continued for about four weeks when on March 21st he slept for the first time and independently of a hypnotic and continued from that time relieved of the tormenting sleeplessness. *Mrs. M.* did not suffer much throughout the disease from wakefulness.

VI. SKIN.

Both patients perspired very freely from the first during the whole course of the disease, gradually sweating less as they recovered their health or the other symptoms abated.

The most prominent symptom was the anasarca. With both patients it commenced in the face, was not very bad there and remained but a short time, when appearing at the ankles it extended gradually up the legs and over the abdomen as high as the thorax. Mr. M's scrotum attained the size of a newly born infant's head, distending the skin until it ruptured and the fluid oozed out. When the anasarca had reached its greatest degree it remained stationary for about three days, then the skin on the legs began to get less tense and the effusion disappeared gradually but quite rapidly. Mrs. M. had much less anasarca than her husband but it remained in her right foot long after she was otherwise perfectly well. The arms and hands were not involved nor was there any ascites. Mrs. M had herpes labialis.

VII. URINARY ORGANS.

The urinary secretion was alike in both patients; diminished in quantity, highly colored, depositing a copious sediment of urates and containing no albumen.

Altogether the woman suffered less from the disease than did the man.

I must confess that we were at a loss how best to treat the disease. The accounts of Trichinosis which we had read in German Medical Journals, suggested, if any at all, no satisfactory course of treatment. The nature of the disorder forbid us to expect much from any specific treatment.

Here I may as well say that I was not for four or five days sure of my diagnosis, and then, being discharged from the management, I had no opportunity for an active attack upon the disease in its first stage. Had I recognized Trichinosis in the beginning, the most rational course would have been to pre

scribe active purgation in order to expel the Trichinæ before they had begun to migrate into the muscles. In this stage the disease is rarely recognized, and perhaps only in epidemics when suspicion is on the alert and suggests an examination of the alvine dejections where the Trichinæ may haply be found.

In our cases I ordered cathartics, (calomel, salts and senna,) fortunately perhaps for the patients, but without suspicion of Trichinæ being present in the intestinal canal.

When we again took charge of the patients and had proven our diagnosis by aid of the microscope, two weeks had passed and the animals had left the intestines and were at home in the muscles. Nevertheless we determined to try carbolic acid with spirits of turpentine. Mrs. M. took these for three days when it caused her severe nausea, and their use had to be suspended. In the main our remedies were addressed to the alleviation of symptoms independently of our idea of their primary cause.

Mr. M. took diuretics for about two weeks without any marked influence upon the anasarca which increased steadily from the 2d to about the 20th day of March, remained stationary for two or three days, and then rapidly decreased unto disappearance. The improvement in this condition coincided with a thorough purgation brought about by *Podophyllin* though it may have been merely "*post* hoc, not *propter* hoc." To relieve pains and wakefulness, morphia and chlorodyne were used. The latter appeared to induce more and quieter sleep. The appetite and digestion being good, substantial nourishment was allowed; meat, beef tea, beer and wine.

How these people got the Trichinæ into them never could be discovered. They admitted that they sometimes ate rare ham, but no Trichinæ could be discovered in the swine flesh then in the house. A family who had bought the half of the same hog and had fed upon it, were not trichinosed. The pork at all

places, where it was learned that Mr. M. had been helping in the dressing of hogs, was examined microscopically but no Trichinæ could be found. The piece of biceps muscle taken from Mr. M. was examined independently by two observers and the Trichinæ exhibited to nearly all the medical gentlemen of the Society and to many other citizens who were curious to see these mischievous worms.

It is much to be deplored that Mr. and Mrs. M. are not enough interested in scientific researches to submit again to the sacrifice of a little piece of meat for microscopical examination. Nothing will induce them to become even in such slight degree, martyrs to science. But it is not probable that it will happen them as it did to Enoch and Elijah of old, nor that cremation will have become universal in America before some of us may have an opportunity to again look at the muscles of our friends.

REPORT ON OTOLOGY,

—BY—

W. W. SEELY, M. D.,

Professor of Opthalmology and Otology in the Medical College of Ohio.

REPORT ON OTOLOGY,

—BY—

W. W. SEELY, M. D.,

Professor of Opthalmology and Otology, in the Medical College of Ohio.

It will be readily understood that a report on otology to a society composed almost exclusively of general practitioners, is necessarily of a different character from one to a body representing this department alone. There is a constant increase of interest on the part of the profession in the department of otology, evidenced not only by the greater attention paid by practitioners to ear diseases, but also by the more general recognition by them of the value of the service to be rendered the patient by a special treatment.

The large number of clever gentlemen devoting their time and energies to this special department are certainly not excelled in their enthusiasm and the amount of work accomplished, by the members of any other department. Unquestionably there is every reason for the greatest sympathy and harmony between those who confine themselves to some one recognized department and those whose tastes lead them into the wider field of general practice.

The ear, until recently, was the most neglected organ in the body, and the attempts to fill up such a disgraceful gap in our science, deserve the highest approval of the profession. It is

to be hoped that the department of otology will command from the general practitioner a faith in the results to be obtained in it, commensurate with the value of those results. There is still room for a vast deal more of encouragement on the part of ear patients from their practitioners to follow up treatment; and to specialists I would say, there is still too great proneness to regard bad cases as tedious and unprofitable and so discourage the patient before a fair trial is made. The test by trial is a point entirely too frequently overlooked by specialists. The data for a correct diagnosis are too limited as yet.

"Improvement" is a relative term. What might be a trifling gain to one patient, who, for instance, was not hearing badly, would be the greatest boon to the one whose hearing was at a minimum.

The utmost patience and satisfaction with the slightest change are the constant demand made upon the otologist in a vast number of cases. The most careful record should be made each visit in every case, but especially in the apparently discouraging ones. He who takes the proper amount of interest in his patients and has regard for his percentage of success must record the *fractions* of the inch.

The line of "incurable" cases is growing shorter all the time, and we should be well assured, not only by thorough and repeated examinations, but also by the test by trial before we consign a single case to that hopeless rank. Of course there is a large number of patients who are unable to submit to a protracted treatment, but I am glad to say while comparing my experience of to-day with that of six or seven years ago, the number of patients who are *unwilling* to submit to a protracted treatment has vastly diminished. I am constantly told now by patients that they do not expect to be cured under months of treatment and that they will continue to come any length of time.

Some of the most happy results have been obtained where for the first six months or a year very little progress was made. Certainly such experience properly recognized will be of infinite service, not only to patients, but for placing the department in a proper light before the general profession.

Long after extraction of cataract had supplanted the needle operation, patients would present themselves entirely unprepared to stay for the operation, as they had been told it was only a trifling affair, and a day or two was all that was required. Ear patients must be given to understand that time aud plenty of it may be necessary.

Special patients must take lessons from the general. Those who would study a specialty must study well in the general field, for encouraging cases and tedious ones are most everywhere. The specialist's work only has its share of sunshine and pleasure. *Success* in all departments and in all callings in life means work, and he who adopts a calling because he thinks it easy and remunerative, and free from the ordinary demands on time and talents, will be sadly mistaken.

As yet, comparatively little attention has been paid on the part of the general profession to diseases of the ear in early life.

A meagre amount of knowledge of the anatomical conditions of the middle ear in young children ought to indicate the readiness with which disease may occur. The frequency of ear-ache gives a practical demonstration of the frequency of disease of the ear in children old enough to locate it for us. There seems to be a great reluctance on the part of the practitioner to devote any serious thought to the ear in these little people, even when he has the *direct evidence* of disease before him, viz.: the appearance of a discharge.

Even the ear ache of older children is still far from command-

ing that attention which certainly every practitioner's honesty tells him belongs to it.

An acute inflammation in the middle ear at any age may always be a serious matter, either at the present or during the future. I not only see in the parts themselves the results of previou disease, but I am also repeatedly told by patients that they as children suffered from ear-ache; thus we see that fruits of future trouble are often sown early.

Diseases of the ear in very early life are just as readily treated as those occurring later in life, and more intelligently than a large number of troubles incident to this early period, because the eye at once recognizes the trouble, and the application of the remedy or remedies is easily made.

If, on examination the membrane is found inflamed, an inflation of the middle ear by the Politzer Method will generally be quite sufficient. If a discharge has appeared, the ear should be carefully syringed with warm water, and then inflated, and if after a few repetitions (daily), the discharge does not cease, some astringent can be injected into the ear, as, for example, zinci sulph., gr. j—iij ad aquae, ℥j.

Syringing to remove the discharge, and inflation in very young children should always be tried before resort is had to astringents. If the inflation can not be performed, I would advise those having little experience, to syringe the ear, and use some soothing lotion, such as morphia or atropia, before resort is had to astringents. While giving this advice I am far from saying that astringents are not recommended, and of great service, when properly used. I believe from what I have seen, that the course I advise for those who see comparatively few cases, and hence have a limited experience, is a wise one. One can continue to treat the *results* of his remedies indefinitely.

That excruciating disease so common in children, *ear-ache*,

being *an inflammation*, is so amenable to treatment that it is a disgrace to the profession that children are allowed to suffer from it week after week, and month after month. The great trouble seems to have been that the profession has seen fit to call it "nervous" (what a multitude of sins does not that word cover!), instead of recognizing its true character, and endeavoring to meet it in a scientific manner.

The ear, of course, ought to be treated to remove the cause of pain, but as that is not always practicable the symptom must be attended to. Warm solutions of atropine or morphine (4 to 6 grs. to the ounce of water), or even warm water itself, or a drop of *cold* water, stopping the ear *immediately* with cotton, in all cases, answer to remove the pain. In very small children, inflation with the balloon generally acts like magic, and has the advantage of not only removing the pain, but also the condition of things that produces the pain.

In older children inflation is not so efficacious, but until the ear is gotten into a better condition by inflation, either leeches locally, or *turpentine* internally, can be used to relieve the pain. Weber-Liel's recommendation of turpentine in inflammations of the *middle ear* is a most valuable one; of course, this remedy can be used irrespective of the age of the patient. The full dose for an adult is a teaspoonful morning and noon, and a desertspoonful at night.

If any dizziness occurs or if for any reason the dose is to be lessened, let it be by omitting the morning and noon dose, not the evening. Leeches, so invaluable in most of aural inflammations, are not always to be procured nor are they adapted to very young children. Otorrhea in children is an exceedingly tractable disease if taken early. As we usually meet it, it is many times most tedious.

Success in the practice of medicine and surgery is vastly in-

creased by the strictest personal attention and the not leaving to others what we ought to attend to ourselves. Shirking is fully as fatal to our practice as to our patients. It is an every-day experience to hear, "Dr. So-and-so prescribed something and told me to use it." When will we find a cure for this everlasting itch for prescribing? We are a great army of prescribers. There is no organ in the treatment of whose diseases the applications of the remedies can more illy be delegated to the patient or friends.

These remarks apply very pointedly to *otorrheas in children.*

During the past year, owing to the prevalence of an epidemic of scarlet fever, a large number of cases of otorrhea in children have presented themselves and I was surprised when I came to reflect how rapidly they recovered with very little treatment. I failed to keep an exact record of the percentage cured without astringents or with but a single application.

It must be remembered that the majority of these were fresh cases. So unsatisfactory was my former experience in suppurative inflammations of the middle ear, when I *prescribed* and left to a great extent the carrying out of the treatment to the patients or parents that I found it was wise, not only for my own reputation, but for the patient, not to prescribe at all if I could not attend to the ear personally at least once or twice a week. Syringing is by no means always sufficient to thoroughly cleanse the ear, in fact it sometimes rather seems to do harm. The profession is certainly perfectly aware of the unprofitableness of "*prescribing,*" for otorrheas. The reason for this want of success is the reliance placed on the remedy and the shirking of the application.

EUSTACHIAN TUBE.

Children are exceedingly liable to obstruction of the eustachian tubes. In strumous children, with nose and throat affections, with enlargement of the tonsils we not unfrequently find a similar swelling and closure of the tubes. Such children are not unfrequently allowed to remain hard of hearing until the throat affection is more or less removed, under a false idea that it is "throat deafness" and the throat must be relieved first.

If the tonsils are very large they must be removed or the child's hearing cannot be improved (they say). A very bad throat and the largest tonsils do not prevent a restoration of the hearing. Undoubtedly the throat trouble and the enlarged tonsils should be treated, but not to the exclusion of the trouble in the eustachian tubes and middle ear. The largest tonsils do not close the eustachian tubes by direct pressure.

While there is the best authority for always removing by amputation, enlarged tonsils, not only for the benefit of the ears, but also for the general system, remember that it is an operation by no means always brilliant, either in a surgical or aural point of view.

Again, parents are generally exceedingly unwilling to have the tonsils removed. Fortunately, success in relieving the deafness has usually but the one drawback, viz., the liability of relapse, and hence the necessity for more or less treatment at times. I happened to have two or three characteristic cases of deafness associated with bad throat and enormous tonsils soon after beginning practice. The patients, since the first thorough restoration of the hearing, have required but little treatment for the ears. Two of these patients had had the tonsils removed (one twice) before they came under my care and the parents were unwilling to have any more operations. To-

day the tonsils will touch and the slightest attack of sore throat will make them overlap. As regards their general health there is no fault to be found. I give the history for encouragement in such cases.

Politzer's Method, that great boon in the treatment of obstruction of the Eustachian tubes and middle ear troubles in children, must be persevered in, for while the improvement may only last at first but a few hours, the length of time will increase so that treatment once or twice will be quite sufficient; all such patients' parents must in the meantime be taught to understand that future treatment may be necessary, that is, whenever the hearing diminishes. Such patients have, of course, a condition of the general system that indicates cod-liver oil, iodide of iron, etc., for a year or more.

CHRONIC CATARRH OF THE MIDDLE EAR.

This title seems to cover an immense number of cases of hardness of hearing, but we do not propose to study its application or correctness. Until recently, no diseases were more hopeless than affections under this head.

I propose only to notice the use of the air-douche in affections of the middle ear. Is has become almost as much the fashion now to inflate the ear as it was formerly to syringe it, and more or less discredit is the result already. Politzer's air bag is given into the hands of patients, even the Eustachian catheter.

If the patient has one good ear it is not wise to use the Politzer method as it inflates both ears more or less. Again, an ear should really never be inflated without the operator knowing whether the air gets into the ear, and the amount of it. Of course this knowledge can only be gained by using the diagnostic tube. A deaf man is no more capable of treating middle ear diseases

than diseases of the chest, and as one would not feel that he had done his duty to himself or patient in thoracic affections without putting his ear to the chest, no more should he feel justified in not using the diagnostic tube when inflating the ear. The patient's word or feeling is never to be listened to. I have repeatedly had patients who had had attempts at inflation of their ears not only by the Politzer method, but even also by the catheter, assure me that the air passed into the middle ear, but when a most careful trial assured me that they were deceived. Every one has seen cases in which patients are positive the air is entering when the catheter has been proven to be before or behind the orifice of the Eustachian tube.

I repeat, then, that it should only be the rarest exception that a patient is allowed to treat himself even by the Politzer method. While inflation is potent for good it is also potent for evil, and this remark is especially true when it is done by means of the catheter. Think of the danger done by the injudicious and bungling use of the urethral catheter! The knife in ocular surgery requires no more skill and delicacy in handling than does the Eustachian catheter. While I shall not pretend to point out the vocation for bunglers, I certainly must regard both general and special surgery forbidden ground. No definite rule can be laid down for the use of the method of inflation, whether it shall be done every day, two or three times a week, or less frequently. There are cases in which the simple air bath every day seems to answer; again twice a week seems often enough; again we are obliged to inject fluids, some astringent when there is swelling and secretion, or stimulants when there is a dryness.

A preliminary examination will scarcely afford reliable data, nor even can the sound the air makes in passing into the ear, always be depended upon. Only the results of treatment can be implicitly relied upon.

In general, moist sounds indicate astringent, but dry sounds may or may not indicate irritating or so-called absorbing medicines.

TINNITUS AURIUM.

Too much attention cannot be paid to the distressing noises so many ear patients complain of and which are known as tinnitus aurium. It is, perhaps, quite well known that suicide has been the result of these subjective noises. Of course in such cases there is an important factor to be regarded, viz., the peculiar depressed feeling that middle ear troubles frequently engender. The profession and laity are quite apt to regard the *deafness* as the cause of these depressed feelings and changes in the disposition, but it is a mistake; it is in some way connected with the state of things that *causes* the deafness, for the mind can be freed oftentimes by inflating the ear, while the deafness remains unchanged. I am inclined to believe that the percentage of incurable cases is far less than is usually taught, and one should be exceedingly careful how he condemns a nervous person with tinnitus to the rank of incurables.

TENOTOMY OF THE TENSOR TYMPANI MUSCLE.

I speak of this operation here from its salutary effect upon tinnitus. The operation is growing in favor and promises to be an important measure in aural surgery. Before its full value is to be realized the operation must become so settled and popularized that it can be practiced early in the history of the case. Thus far it has rather been deferred and practiced as a dernier resort. From its present history it adds to our means for reducing tinnitus aurium, as this is a symptom of pressure of the

stapes (caused by a contraction *often* of the tensor tympani muscle) upon the fenestra ovalis, the circulation of the internal ear being thus interfered with. (Gruber.)

VERTIGO AND DIZZINESS.

Vertigo and dizziness are such common symptoms of ear troubles that it is rather surprising the attention of practitioners is not more frequently directed to them after they have puzzled their brain for an explanation. I have quite a list of such cases for which all sorts of lesions have been supposed as the cause.

It is both humiliating and farcical to treat a patient week after week with dyspepsia medicines, when the cough and dizziness are due to the plugging of the ears with cerumen, and yet such a thing has been done. Again, it is a serious matter to tell a patient that in all probability his vertigo is owing to the blow he has received upon the head, while in reality, it is but owing to the ear trouble caused by the blow.

THE NASAL DOUCHE.

I have called attention before to the risks run by the use of the nasal douche. In addition to the cases selected from my own practice in my last Report on Otology, I have seen additional ones, though of a less serious character. As I advised the greatest caution then, I now repeat it, and would give you the suggestions of Dr. Seyfert. 1. The vessel containing the fluid to be injected must not be higher than the forehead of the patient. 2. The forehead of the patient must not be inclined forward too greatly, for if it be the fluid enters the frontal sinuses. 3. The fluid used in each case must be tepid, and in bad

weather the patient should not leave the room for one quarter of an hour after the use of the douche. The Dr. says that in the numerous cases in which he has seen the douche used after this manner, in Prof. Wendt's Clinic in Leipsic, no secondary inflammation has occurred.—Burnett, Transactions of American Otology, Dec., 1873.)

THE GALVANIC CURRENT.

Interesting and valuable experiments are being made in the electric department. The contest over the question as to whether the auditory nerve will give reactions under the constant current, can hardly be called settled, though so much of it as related to Brenner's assertion, that certain formulæ could be established for this reaction, has certainly been decided in the negative.

In the abstract there would seem to be as much reason why the auditory nerve should be affected by the stream as that any other nerve should be. I presume, until some practical results follow in sufficient numbers from the experiments of men capable of examining the ear, the number of skeptics and the number of believers will be about equally divided. So far as any trustworthy experiments go, the department is young yet, and no rapid progress need be looked for, as any one who has experimented with a Brenner apparatus knows the excessive tax it is upon his time and patience. My personal experience has led to but meager results, for I have confined myself to cases of pure nervous trouble.

My experience with the current in diseases of the eye where the application is so much more simple and easy, has been somewhat extensive and brilliant, and I am beginning to regard it as an indispensible remedial measure in the opthalmic department.

I need, perhaps, only allude to abscess of the brain and pyæmia as the result of suppurative inflammation of the middle ear. The fact that no one cause of abscess of the brain counts so many cases as chronic suppuration of the middle ear, that about one-fourth of all the cases of this disease is so caused, is sufficiently startling and needs no comment. I have already published a case of epilepsy, facial paralysis, purulent meningitis and death from chronic suppurative inflammation of the middle ear with necrosis of the surrounding bones. I cannot but feel that entirely too little attention has been paid to the ear in the different cerebral affections of children. It would seem, after all that has been said upon the peculiar and intimate relations of the parts of the middle ear and brain in little children, that one of the first organs examined in cases of brain trouble would be the ear. I refrain from giving examples of actual and supposed brain disease that have come under my observation, as they can be far more advantageously given in a separate report of cases.

My design, gentlemen, was not to present an essay, but simply to make such a presentation of subjects and facts as would place the department represented before you in such a manner that it shall receive its proper share of recognition, not only in the light of a special department, but also in its relations to the general department.

Report on Monomania,

—BY—

D. A. MORSE, M. D.,

OF LONDON, OHIO.

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Is there a MONOMANIA? Is there a *mania without delirium? without delusions?* An *Instinctive Mania?* Is there a *Reasoning Mania;* the *moral insanity* of Prichard? How are *instinct* and *intellect* related? Can a man be *insane* as to one idea, or fact, and *sane* as to all others? Can a a man be insane as to *instinct* and remain sane in intellect? Is *delusion* a *test* of insanity? Is "*Knowledge of right and wrong*" a just and sufficient test of *responsibility?*

Gentlemen of the Ohio State Medical Society:

Last year I directed your attention to a condition, or disease, alleged by many writers to be entitled to rank as a form of insanity, and which is, viewing it from their standpoint, of sufficient importance and distinctive characteristics to be designated a *monomania,* by name: DIPSOMANIA.

The views of any one writer upon the subject are brief, scattered, yet I collected them; presented my theory; and awaited the verdict of those who had given the subject special attention. The reception it met with is sufficient evidence that my labor was not fruitless.

The subject of Dipsomania involved many questions not considered in that Report; questions that are of great importance,

and upon which many views there entertained must rest. These questions are the foundation of all theories that attempt to maintain the existence of a monomania, or to explain it.

When we desire to explain the phenomena constituting any form of partial insanity, whether intellectual or moral, as the so called homicidal mania, instinctive, reasoning mania, *i. e.* the *moral insanity* of the English writers, or other form, we must first determine these questions; for no theory, the foundation of which rests upon them, is tenable until it is fully determined that it is grounded upon truth. A superstructure reared without solid foundation may humble and mortify its architect when storms of professional and scientific criticism assail it; but when well laid in clearly demonstrated truth, the superstructure may be reared to any height, and he who would cause it to topple and fall will but more firmly settle it upon its base. As we declared last year, follow the precept of Aristotle—determine whether a thing be so before you attempt to explain it—the *an sit* before the *cur sit.*

While I thus direct your attention to this rule that should govern all scientific investigation, it by no means follows as a consequence that I will reveal all the hidden mysteries of that incomprehensible union of body and mind—leave nothing to be considered worthy of attention—or even extend my research further than others have done, for I confess that finite vision is too limited to penetrate where Infinite vision alone can penetrate, where Infinite mind alone can comprehend and explain.

In my report upon DIPSOMANIA I called attention to the question raised by Pinel, and again excited by Fodere and others: "*Is there an insanity without delirium?*" In other words is not delusion the essence of insanity?

I remarked that this year I would discuss "mania with homicidal tendencies—instinctive and reasoning mania; the relation

of instinct to the mental faculties, and the part it plays in the instinctive or impulsive forms of insanity."

The questions I have presented embrace mainly these points, and although I cannot discuss them individually, yet I will endeavor to consider them as fully as if this were done—the close relation existing between them forbids all other consideration.

In my report upon GENERAL PARALYSIS I have remarked that, after hearing the family history and that of the patient, the first point to which a physician should direct his attention should be to the instinctive tendencies of the patient: whether instinct be normal, perverted, exaggerated, or as it were abolished.

No further explanation is necessary than to ask you to consider the nature and seat of instinct and its relation to the higher intellectual powers.

WHAT IS INSTINCT?

Cabanis, *Rapports du Physique et du Moral del' Homme*, defines instinct to be "those ideas produced by internal impressions, caused by excitation of internal organs; an act executed without a knowledge of the end or object, or without a consideration of the relation of the end to the cause, always employing the same means."

Thus each species of animals has its peculiar instincts, exercised only when called into activity by Nature's demands, as for defense, to gratify appetite, to perpetuate the species, and like acts purely instinctive, and which under a change of circumstances are unmodified by them to any great extent. Foxes avoid their pursuers as foxes ever have from the foundation of the world. Reason does not teach them when detected in the course they pursue to modify it.

Instinct is inborn—is not the result of education or experience further than this: animals may be taught many things—the education of one generation frequently becomes the instinct of the next. Animals generally perform instinctive acts as well at birth as at any subsequent period, with this modification, that their performance is more dependent upon the degree of development or maturity of the physical system of the animal than its associations or education.

Reid, *Intellectual and Active Powers of Man*, defines instinct to be "a natural blind impulse to certain actions, without having any end in view, without deliberation, and very often without any conception of what we do."

Laycock, Mind and Brain, vol. i, says: "Philosophers in speculating on the mental differences between man and animals, have attributed to the man *reason*, to the animal *instinct*. Hence, animals are irrational, men rational beings. Instinctive actions are not founded on knowledge or experience; rational actions are. Instinct is the *cause* inherent in animals of those proceedings on their part which take place, not only without experience as to the past, but without any conscious adaptation to accidental circumstances, and without any knowledge of the results to follow the course of proceeding. In short, in instinct there is what is termed a blind intelligence, *i. e.*, an intelligent adaptation of actions to ends, but without knowledge of the past, present, or future. * * * * "If we consider the meaning of the term Instinct, in its widest application, as manifesting a blind, unconscious adaptation to ends, the actions appropriate to nutrition or alimentation, and of respiration or æration of the tissues, are instinctive. The acts by which these objects are attained may or may not be associated with states of consciousness; and even when there is a concurrent feeling of pleasure or pain experienced by the organism, we observe that

there is coincident therewith only an aiding or intensification of the actions; the actions themselves are done independently of a knowledge of their order, or cause or object. And there are other processes of a similar kind, as to object, which are even more independent of mental states than these; for they are certainly performed without any consciousness whatever. Hence, instinct, in this more general sense, is a property of vegetable organisms as well as of man. It is therefore the supposed cause of all those acts which are performed either without any mode of consciousness absolutely—that is unconsciously; without any knowledge, on the part of the individual, of the ends to be attained by the acts; or without any volition. Thus Dr. Reid: 'He (a new born child) is led by nature to do those actions (*i. e.*, sucking, swallowing, &c.,) without knowing for what end, or what he is about. This we call *instinct.*' There is no word more commonly in use by everybody than this word *Nature.* * * * In this case Nature is but another word for instinct. Now the ultimate *fact* expressed in the word is order according to a law of design, without consciousness on the part of the thing ordered. In this sense Nature is but another term for life."

When we extend the meaning of the word to so general an application, we may embrace nearly, if not quite, all of our mental operations. But when we speak of mental operations that do not appear in consciousness, with man, by which without a process of reasoning a conclusion is formed, we term it an *intuition.* This constitutes one of the essential elements of *genius.* It is a short cut that enables man to grasp truths that otherwise the most elaborate process of reasoning would oftentimes leave still beyond his grasp. It bears more resemblance to the intelligence of animals than that of man, for this reason, that it is the result of unconscious mental activity. The mind

is unable to recognize any process by which the conclusion arrived at is attained and unable often to afford a reason for the conclusion. It is this element in man which the world calls "common sense," "good judgment," &c., a judgment without reason, a conclusion without facts.

Animals indicate in the skill displayed in their labors the highest degree of intelligence—yet when we observe that each follows a definite course like his fellows, as that the bee never builds his comb like the wasp, or a hornet like a bee, that each bird of a species builds its nest as all others of that kind, of similar materials and in similar places and manner, that all animals whether possessed *apparently* of a high or low degree of intellectual power, obey the fixed and imperative laws of their being, we conclude; that if in obedience to reason the reasoning faculty is limited and that it always obeys a predetermined law.

That these laws are predetermined and not the result of experience, of education, or the exercise of reason or judgment, may be shown by the fact that a change of circumstances does not modify them. That they result from internal impressions may be shown by such facts as that at the period of the breeding season when the ovaries begin to enlarge the bird begins to build its nest, although deprived of a mate, as when caged. The male seeks its mate in obedience to the same law, and with the cessation of activity in the organs of generation, abandons her.

With the human being love seems to be to a great extent dependent upon similar conditions, for with the period of puberty comes the full matured passion—love. Whatever may be the reaction upon the intellectual centers, however pure and sincere the affection, however sentimental the individual, there is an unfelt irritation in the organs of generation—which at times becomes a conscious state—rendering it impossible for the

mind to be directed into other directions—it subdues to itself all the mental powers—and reason, reflection, imagination, Will, are only employed as servants of the irresistible impulse which impels man to gratify it to appease the desire. Thus the conditions with male and female by which individuals are forced to abandon themselves to their lusts are but modifications of natural instincts—conditions we observe in nymphomania, erotomania, onanism, &c; the local irritation of organs having been reflected so powerfully upon the brain that it yields and recognizes no other controlling power.

With the bird there is a law directing all its actions, the migratory species showing this in the highest degree. When the breeding season is over they gather together and as if by common consent wing their flights to other climes. This occurs before change of season warns of approaching cold weather sufficient to affect their comfort, and again they return only when they are secure from the fatal influence of winter. Instinct is to them a certain guide. Again, animals select such food as Nature determines. Nature determines so far as we can judge, all modes of activity with an animal, and it is no contradiction of this to say that the sense of smell or taste determines what an animal will eat or drink.

Thus, in the so often cited instance of Galen's kid, which when taken from its mother's womb drank milk when placed with other substances before it, in preference to them, after having examined them, it has been said the *senses* enabled it to decide which it should drink.

Who educated this sense of smell or taste so that from birth to death an animal will eat or drink only what will sustain its existence? Who educated its senses so that whatever may be the degree of hunger it suffers, it still will devour only its proper food? What but instinct governs this: what, when,

and the quantity it shall eat? The poet has observed all this and inquires:

> "Who taught the nations of the wood
> To shun their poison and to choose their food?
> Prescient, the tides or tempests to withstand;
> Build on the waves or arch beneath the sand?
> Who made the spider parallels design—
> Sure as De Moivre, without rule or line?
> Who bid the stork, Columbus-like, explore
> Heavens not his own and worlds unknown before?
> Who calls the council, states the certain day;
> Who forms the phalanx and who points the way?

Collineau, *Analyse Physiologique de l'entendement Humain Paris*, 1843, presents an extended consideration of the subject of Instinct. It is valuable as furnishing us a starting point from which we can extend our inquiries. He says: "The word *instinct* is applied to all internal movements, sensitive, intellectual, affective and moral, whether voluntary or involuntary, exercised without knowledge of the cause or nature of the action by the being which acts, the action being the immediate result of its organization and innate disposition.

In psychology instinct begins everything; it manifests itself with the first organic movements; it is a kind of intelligence communicated with life, and which develops itself more or less according to the degree of organization, the circumstances, and habits which facilitate it. With man, instinct is arrested or weakened as soon as we have an intimate perception or consciousness of our intellectual acts; *for this consciousness is the line of demarcation we place between instinctive acts and those of intelligence.* We say that *we have placed,* for this demarcation does not exist naturally, it is a mental conception. In reality instinct exists wherever there is intelligence, even where reason rules, and retires only as reason causes it to disappear. In no other way does it yield to reason.

"The internal movements of the organized body have limits

they rarely can pass; the organs have generally a determined relative volume; as the stature of man increases but little beyond a certain height, so it is with his mind. The great genius appears only at long intervals, and however well he may be guided and sustained by the labors of those who have preceded him, he cannot pass the limits placed by the period in which he lives, except in rare cases, only by emitting a few rays of light or impulses which resemble more instinct than they do intelligence, for we find in their works profound views, beauties, of which they are not themselves free from doubt, although the conception appears simple and natural.

"But that which proves better this last proposition is that when it becomes necessary to renew a work of a certain extent, which has escaped from the memory, they can never do it in the same manner, nor like in all points as it was before." This confirms, if true, what we have said concerning the intuitions of genius. Always as civilization extends, the force of individual intelligence increases, the material which feeds thought, which is digested and assimilated as mental food, becomes greater and more abundant, thought becomes more generalized, and co-ordination results in organized principles. Hence we would then expect intellect to be developed in a corresponding ratio beyond instinct, instinct, in abeyance, to be guided by intelligence, or supplanted by it.

But with man before intelligence is developed there is something that gives rise to action, there is something that directs and limits it when begun; it is not reason, it precedes intellect and exists with animals deprived of organs competent to construct or form a thought, animals not sufficiently developed to exercise reason; this is *instinct.*

Instinct controls to a certain extent our moral as well as physical and intellectual life,—we struggle with it continually,

and it is only when continued mastery of it has placed it in complete submission we are able to pass beyond its influences. This determines the moral life of an individual: his tastes, passions, appetites, habits, desires, propensities, and although from its very nature he is unconscious of it, his moral liberty is dependent upon it. It is that with which St. Paul continually warred; his reason teaching him that with fallen man, instincts, unless guided by Divine hand, are at enmity with good morals and religion. This applies to individuals; nations are but the aggregate of individuals—multiply individual history and you write that of nations.

Instinct is placed in man as a conservative power, protecting and preserving him. It is inseparable from organic life; it commands all movements, determines all actions, and requires the utmost freedom in all its manifestations when so controlling that which organic life is dependent upon; in the majority of instances where it presides directly over organic life there can be no restraint from intellect or impediment to obstruct its free exercise of power.

It is inborn; but not *infallible*. It is never wanting even with monsters; yet it is not wholly the result of organization, of sensibility, reason or will, for the condition of its existence is that it produces all, organizes all, directs all in the great ecomomy of nature.

Singular as it may seem, while conscious action is so apparent in the instinctive movements, yet nevertheless instinct is blind; it is an inherent principle of organic beings, developed in all organs, yet not the property of any organ; not a special sense, yet rises above the senses; absolutely essential to animal existence usurping the empire of reason, it directs the forces which intelligence can utilize and systamatize, thus becoming a power behind the throne, not only to shape individual character and

the fate of individuals, but through individuals the destiny of nations.

Will, the supreme executive power of the mind, cannot always resist instinct. Pain, the emotion expressive of injury or violence, may induce instinctive action—may appeal as a motive to the will: the will impelled by the irresistible motive yields obedience. We do not always do just what we wish, we do not always know beforehand what we are going to do, we sometimes, prompted by desire or emotion, do what we would not. The highest degree of intellectual development, the most perfect freecom of the will gained by long exercise of its power, will not secure complete submission on the part of instinct. So clear is this that some writers regard instinct as the determining power of all thought, emotion, action; of our intellectual and moral nature. This we do not believe. *We* accept the assertion that instinct is felt in the domain of all our nature—but that conscious intellectual action is never instinctive action, although instinct may prompt the act. Still with our own consciousness of free action—our boasted free moral agency—how much of all our conscious life can we say is free from the directing power of instinct? We think of what we would not, we try to think of what we cannot, and learn at last that our best thoughts are spontaneous, surprising even ourselves with their force and clearness, unconsciously as it were, expressed. The will may require a train of thought —or direct the train of thought through the mind, holding it upon one subject, yet it is apparent that the thoughts expressed are co-ordinated by instinct, and that even as we write we know not when we write one word what the next shall be. It is then as if by inspiration man's best thoughts arise and flow from his pen, to his own consciousness appearing as if coming from a source beyond and higher than himself. There

may be intuitive conceptions of an end to be attained, yet in what respect does it differ from any instinctive act. How can we prove that we determined a thought by our own intellectual acts and volition, when we are unconscious before it is conceived that it will ever be the offspring of our brain? While man's mind thus guided by instinct may run on, he has power to direct his attention to it, turn it into other channels and thus thwart instinctive power.

THIS POWER TO CONTROL THE MIND—WITH CONSCIOUSNESS OF THE EXISTENCE OF SUCH POWER, SEPARATES MIND FROM INSTINCT.

We pass a great portion of our lives thinking, without a knowledge of what we think, the cause that determined the train of thought, or the object of it. Our emotions are unconsciously excited, we see, unconsciously, the reality of all we think, and awake to consciousness as from a dream when attention fixes the mind upon its own operations. Metaphysicians say this is *reverie*; but that is only another term to express the fact that the mind has been left to itself—abandoned to its own instinctive forces. What have we in acute mania but this condition? The ideational centers (cortical substance), active by increased flow of blood, over stimulated, show exaggerated functional activity. The attention may be directed at times to the mental states, or operations of the mind, yet there is so profound lesion of the WILL that all is chaos and confusion. The state of internal organs, irritations within them, are reflected upon the brain—the brain already excited is at the mercy of a ceaseless train of thought, thoughts seemingly unfinished, crowding one upon the other. The very profusion of ideas forbids their being matured. Here is a condition analogous to reverie, and dreams, but to which the mind is seemingly abandoned. It has not power to

recognize clearly its own operations, to hold them in consciousness—or arrest, except when some powerful motive induces it, acting from without, this abnormal activity—we say there is insanity.

There is unconscious, instinctive action, and there is conscious action determined by the WILL, subject to reason. If it is beyond the power of the indivdnal to arrest, as in the first, he is irresponsible—in proportion as the last obtains he is responsible.

Instinct bears this relatiou to reason: instinct is not actuated by conscious motive, has not consciousness of its own acts, of the motive that induce the acts, or the end, result or object of them. It is a blind adaptation of means to an end which is always accomplished in the same way. *Reason is instinct,* but much more; the mind is conscious of its own states, motives influence its operations, and the same result is seldom attained by precisely the same means. Reason modifies the means employed to suit the end to be attained. Instinct prompts man to gratify a passion or an appetite; reason teaches him when hurtful to refrain, and WILL commands obedience to reason. If there be a lesion of intellect passion may run riot —instinct may rule supreme; appetite, passion, and desire, may have no guiding or opposing force.

Collineau says: "the cause ought to include all that which is the effect." He says: "the principle of life includes latent sensibility, that is to say the cause, force, power that we suppose acts upon the organic elementary parts. Latent sensibility includes the principle of preceptive sensibility, in this relation, that it is the cause of the formation of the organization, by means of which this modification of general sensibility, this feeling with perception, is developed, and places us in connection with the external world as we are with ourselves.

The perceptive sensibility manifests the first appreciable acts of instinct, and instinct itself is now a degree more or less advanced of intelligence attached to the exercise of all the organic functions, as well as sensitive, intellectual, affective and moral; but still beyond the influence of conscience and WILL directed by reason.

In effect, what do we observe in the perfected organization, considered as a material and sensible being?" Impulses determined by wants, desires, in a word by internal feelings, all instinctive. To what do these impulses tend? To perception—to distinguish the nature of these relations, to connect us with objects that can satisfy these desires or which excite them; to remove us from those which have not these qualities or which act in a contrary sense. It is the exercise of distinctive feeling and affective sensation.

But if, after these tendencies, these desires and sensations, we continue to act without consciousness and without reasonable volition; in the sense of the impulses which have produced them, or if we cease to act, we yet exercise instinctive action; we do, whatever it may be, that which pleases us, or cease to do that which displeases us. But instinct then becomes intelligence; for however feeble we suppose them to be there are in these determinations *judgment*, *memory*, *foresight*, and *volition*. In effect, if we continue to act it is because we find the thing good or proper, it is because we find the sentiment of well being manifested in what we experience, and that which we experience causes us to hope, desire, foresee and *will* the continuation of the same state. Thus there is an intelligence, or manifestation of intelligence, in all living, organized beings even when they act solely under the empire of instinct; because the order, because all their impulses, and above all those which relate to the preservation and propagation of the

species, are foreseen, co-ordinated and regulated in advance. But this intelligence is not the property of the animal, they have not acquired it, they are not conscious of their acts, and if they exercise them with desire, volition, and even sometimes with a species of reason, this reason and the determinations which result from it, are neither the fruits of experience, deliberation or choice incited by motive; they are not *free*. When even the animal does not act absolutely after his physical organization, he can neither will any thing nor reason otherwise; his intellectual impulses, determinations, aud acts, are still instinctive. As soon as movements are practiced with consciousness and reasoning volition, that is to say, from the moment they are the result of acts felt, perceived, distinguished, compared, judged and willed, they cease to be instinctive, they definitely fall under the empire of intelligence.

It is then a fact which takes a new character from the moment when another fact is connected with it; thus such acts as were instinctive because performed without knowledge of their being performed (i. e. without consciousness) without having *willed* them, or having willed them without consciousness of it, become acts of intelligence from the moment we become conscious of what we do, from the moment we are conscious that we compare, judge, reflect, deliberate and choose.

Is it then in the first place this consciousness, this intimate perception of the instinctive act which gives it its intellectual character? Yes, the knowledge changes and modifies all, yet bears in itself the life and light of it; this knowledge, this intimate perception, is in itself, in its origin, but an instinctive fact. Intelligence is then born immediately from instinct.

But many as pass of our instinctive acts incessantly to the intellectual state, instinct is not lost; it is always the base of our first movements, that is to say, of those which fall not yet

under the action of consciousness, and have not been submitted to judgment, or reflection; instinct remains always and is the tie that connects all our intellectual acts to the vital principle and universal order."

Thus what becomes an intellectual act, or an act recognized by the mind, may arise simply as an instinctive impulse, and does not become an intellectual act until there is consciousness of it. By *consciousness* we mean that metaphysical term employed to signify the knowledge the mind has of its own actions. I shall not stop to discuss the multitude of questions metaphysicians raise concerning this function of the mind, whether it is a faculty of the mind, or the sum of all the faculties, or whatever it may be, it is sufficient to say that when the mind has knowledge of its own operations we say such operations are conscious actions. Thus I may read, turn a leaf, and at the same time am not *conscious* of the fact. If I read, *knowing* that I read, or perform any other act, with the mind directed upon it so that I *know* the act is performed, I say there is a consciousness of it.

No act of the mind, or mental state, is retained in memory unless the attention has been so fixed upon it that it is held up to the mental gaze in consciousness, and the more vivid the picture the more firmly is it impressed upon the retentive faculties—the more tenacious the grasp of memory. This may serve, also, as a distinguishing feature of intellect. Our fund of intellectual knowledge is acquired, and by memory preserved. Our *wisdom* is this fund elaborated—our ideas are drawn from it. Impressions made on the senses give rise to ideas—all are stored in memory and become the food of the mind—*wisdom* is this food digested and assimilated. *Knowledge is not wisdom.* A walking library repeats parrot like what he has learned—it flows out as it went in—crude, undigested, unassimilated mass-

es—without appropriation of it there is no mental growth. We cannot resist the temptation here to quote the poet Cowper, showing the contrast between cultivated, systematic, intellectual action, in a well developed and well disciplined mind, and the chaotic confusion of a mind that has only acquired, but has not passed beyond instinctive mental action to a degree of development sufficient to enable it to elaborate mental food—to metamorphose knowledge into wisdom.

"Knowledge and wisdom, far from being one,
Have oftimes no connection, Knowledge dwells
In heads replete with thoughts of other men;
Wisdom, in minds attentive to their own.
Knowledge, a rude unprofitable mass,
The mere material with which wisdom builds,
Till smoothed, and squared, and fitted to its place,
Does but encumber what it seemed to enrich.
Knowledge is proud that he has learned so much;
Wisdom is humble that he knows no more.
Books are not seldom, talismans and spells,
By which the magic art of shrewder wits
Holds an unthinking multitude enthralled.
Some to the fascination of a name
Surrender judgment hood-winked. Some the style
Infatuates, and, through labyrinths and wilds
Of error, leads them by a tune entranced.
While sloth seduces more, too weak to bear
The unsupported fatigue of thought,
And swallowing, therefore, without pause or choice,
The total grist, unsifted, husks and sil."

Winter walk at noon.

This ability to elaborate ideas from impressions, to metamorphose these ideas into new forms, is the property only of *intellect*. Instinct acts in response to impressions without the higher intellectual operations.

There is one peculiarity of intellectual action that characterizes the lower instinctive acts. I mean the instinctive, unconscious tendency to imitation. We think in the same manner, reach the same conclusions, entertain the same opinions as others, by virtue of this instinct—imitation. All writers speak of it as showing its influence in extending nervous disorders. It

has been an unconscious power impelling its victims to crime, suicide and vice in all ages. We cannot rise above it. It is an instinctive principle of our nature. We call it *custom* and *habit* and everything else but *instinctive imitation*. It forms our opinions although we insist they are the result of our own intellections. Charron says: "Almost every opinion we have we have but by authority; we believe, judge, act, live and die on trust, as common custom teaches us; and rightly for we are too weak to choose for ourselves. But the wise do not act thus." It is but another expression of the same idea: our imitative, instinctive impulses guide us and reason never enters as a constituent of the act. Hommel says: "An ounce of custom outweighs a ton of reason."

Man is the unconscious tool of instinct—it is the motive—the secret spring of his *conscious* life. The contagious influence of custom in determining the prevailing form of insanity of any age has been recognized by all writers. Epidemic delusions rest upon instinctive imitation. Schiller has observed it with the sane mind:

> "Not that which proudly towers in life and strength
> Is truly dreadful; but the mean and common,
> The memory of the eternal *yesterday*,
> Which, ever warning, ever still returns,
> And weighs to-morrow for it weighed to-day.
> Out of the common is man's nature framed,
> And custom is the nurse to whom he cleaves.
> Woe then to him whose daring hand profanes
> The honored heir-looms of his ancestors!
> There is a consecrating power in time;
> And what is gray with years is Godlike.
> Be in possession and thou art right;
> The crowd will lend thee aid to keep it sacred."

But these men of wisdom, these men who do not cleave to custom, who are able to reason, who digest and assimilate and create, are often the last to act. They point the way of truth

to mankind but pursue an opposite direction themselves. Why? This strikes the key-note of reasoning mania.

The Will, Intellect and Sensibilities, are each dictinct powers. Reason or intellectual action, alone, does not furnish a motive or impulse to action. Hence men of great reasoning powers frequently do not act, or if they do they are as liable to act contrary to what they teach as are other men. A man from his intellectual resources may draw out a most excellent theory, as upon temperance, his reasoning powers may electrify multitudes and yet he be a confirmed sot. The sensibilities are dormant—reason alone acts—the Will is uninfluenced. His reason has no connecting tie of emotion to incite volition. The sensibilities not being excited no motive is afforded to determine activity. The idea to be effective must not only be considered by the intellect but it must react upon the sensibilities.

Our theologians make a practical illustration of this every time they allege that men are convinced in their *reason* of the truth, yet refuse to give their *hearts* to God. In other words they recognize the fact that *reason* may assent to a proposition as right and yet the *feelings* be unmoved. Emotion may be excited and not the intellect.

Man may then reason profoundly upon any moral subject but unless his sensibilities are enlisted no action will result. Do not some religious denominations act upon this in time of revivals? All the appeals are made to the sensibilities—excitement follows—many from an innate power of instinctive imitation or sympathy flock to the altar? Why? The appeal has been made to the feelings alone. Under the impulse, reason not being influenced, the Will is overpowered. When the feeling subsides all subsides. This is all there is of it. If through calm and deliberate reason the sensibilities had been enlisted the work would have been more permanent.

When the sensibilities are enlisted, or appealed to a stronger influence even though this be born of the intellect may render this motive powerless, as an inordinate desire. The intellectual impression in the face of animal passion is unheeded.

The libertine—the gambler—the drunkard, at times, are all uuder the influence of reason and which too excites emotional activity, yet the motive or impulse derived from reason, with the return of the desire, is kept in abeyance, and sensation correlated in desire is the controlling power.

An appetite is but an uneasy sensation or feeling, giving rise to emotion—this reacts upon the intellect and there is consciousness of the state; when the Will is influenced a motive to action is afforded, an appeal is made to remove it. When the desire is stronger than the Will power it is obeyed from inability to do otherwise. The desire may appeal directly to the Will. Desire is an intermediate state between the sensation or impression and the exercise of the Will. Do not confound *desire*, an animal, instinctive impulse, with the Will. But we can proceed no further until we pause to consider the seat respectively of intellect, of sensori-motor action and of instinct.

If each has a different center from whence radiates its power —the sensorium being a bond of union as it were between organic and intellectual life we will be able to consider more fully the distinctive features of the two forces: mind, and vital or organic force as exhibited in the phenomena that characterize instinct and distinguish it from intellect.

The anatomical and physiological relations of the nerve centers of intellectual, *i. e.*, conscious life, and inorganic, explain many otherwise obscure phenomena.

Man is possessed of a double life: his vegetable growth and intellectual life. How are they related? Is one dependent upon the other? Do they react upon and modify each other? Which holds the scepter?

The seat of the intellect is the cerebral hemispheres; instinct finds itself seated in every ganglion of the ganglionic system, its force and character being dependent upon the stability of the ganglion in which it is located, but its special manifestation is determined by its natural endowment, by the conditions and circumstances under which it acts, each ganglion being a brain for the part in which it is located and endowed by nature with such special function as that locality requires. Instinct bears the same relation to the vital powers that conscious intellectual life does to mental power. That is each is the offspring of its respective force.

We are unable to perceive any essential difference between the operation of a law of nature that molds and shapes a crystal from its mother liquid, always after a given form, and that which fashions the plant, limits its growth, forms its organs, as well as those of man, and determines their functions. Why albumen should assume the form of muscle in the animal, or the form it assumes in the egg, why some portions of matter form a tiny animalcule and yet others the huge leviathan of the deep—why the same chemical elements combine to constitute different species of animals, the God of Nature who put in operation these laws alone can explain.

Different parts of the human body are all formed from the same circulation—the same blood current. The epithelial cell of one part selects what shall be appropriated to nourish that part—of another what pertains to its sustenance. Is not this an instinctive force with which the cell is endowed? The cell structure of a gland is likewise endowed with power to select what shall, when combined and elaborated, constitute its proper secretion. Is this power of a lower order than that which directs the bird in selecting the proper material for its nest? Metals crystalize always after as definite forms, each as peculiar to and

characteristic of its kind, as the development of animals and plants. The laws governing one govern all—it is not the work of chance—all are predetermined, the unseen blind force is directed by the Divine Architect, who molds and fashions and brings into unity and harmony all created things.

Does it require any more faith—any greater stretch of the imagination to see the same law operate in the inanimate that operates in the animate being? Cannot he who has endowed man with consciousness delegate power to matter? Cannot He who has ordained conscious action in the mind of man delegate to, or confer upon matter unconscious activity? But matter has no active power conferred upon it, it obeys only the operation of the forces that are resident in it. What then is this force? We say *vital* force constructs a heart with valves, a brain with convolutions, a liver or stomach with secreting structures; how does this differ from the force that is resident in matter—if different, what organizes a plant and what shapes a crystal? What difference is there between the instinct that prompts the animal to quench its thirst at the spring and that which causes the root of a plant to deviate from its course to drink from the same source, or the limb of a plant to bend in its growth that its leaves may be exposed to the light of the sun?

From the lowest order of Nature to man the same law governs, and is manifest in its various modifications of energy and character as the conditions of organization and function require Intellect is superadded, as an extension of this power, yet with a power not inherent to instinct, not a property of instinct: that which renders man a rational, responsible being: CONCIOUSNESS OF HIS ACTS, with reason, judgment, memory and Will, to enable him to consider, determine, act or refrain from acting.

The ability to do or refrain from doing, is as we have remarked,

to a great extent dependent upon the animal nature—freedom of Will is freedom from the tyranny of instinct, of desire and passion which instinct represents.

If intellect is seated in the brain and instinct in the ganglia of organs, how can this be?

The brain, as every other organ of the body, has its life of vegetation and that of function. In this respect it is as dependent upon the vital forces controlled by instinct as all other organs of the body. The brain is not an independent center, but only one great ganglionic center of the myriad that dot the body, fill organs and everywhere preside over their respective locations, exceeding all in size, and endowed with a special function: INTELLECTION.

The brain has its wants, manifest in desire, arising from nutrition, it may be reacted upon or react upon other organs. We have then from the lowest to the higher powers, first *vital force*. It is something imparted to all organized beings, for when withdrawn they become disorganized. We have above this, *instinct*, which is the mind of vital force—then intellect.

All are too familiar with the anatomy of the nervous system to render it necessary that I should refer to the distribution of the different sets of nerves, to show the intimate relation existing between every part of the nervous system.

The ganglionic, or sympathetic system, consists in one or more cells, scattered upon or in the tissues of every organ of the body, a knot or collection here and there giving it the peculiar character expressed by the name ganglionic. When the collection is large, of both cell and fiber, it is called a *flexus*. There is a net-work over all the body, the ganglia—signal stations—transmit to the brain—or allow to be transmitted only messages warning of danger. They act as centers of power to the vegetative function and arrest in a normal state all communication.

The chief ganglia are those of the head, as the opthalmic, Meckel's or the Spheno-palatine, the otic, and submaxillary; the neck, the cervical ganglia; extending along the side of the vertebral column, right and left, in front, as a double chain, we have the prevertebral ganglia; upon the posterior roots of the spinal nerves there is a similar chain.

We shall not stop to discuss the question whether these ganglia upon the roots of the spinal nerves have a special function, to modify or *arrest* impressions coming from internal organs; whether they come between internal organs to modify impressions as do ganglia of special sense. This you may determine for yourselves.

Within the abdomen and thorax the principal ganglia are the *cardiac*, *solar*, and *hypogastric* plexuses. Added to these are numerous smaller ganglia, situated upon the viscera, and which are additional centers of nerve power, reinforcing the larger centers. The nerve trunks of the sympathetic are made up of fibers from both the vesicular matter of the cerebro-spinal and the ganglia of the sympathetic. Their fibers have their central termination in both systems, some arising in the ganglia, others passing out through the anterior roots from the spinal cord. The fibers from the sympathetic interpenetrate those of the cerebro-spinal in the roots of both the anterior and posterior nerves. Those fibers derived from the ganglia, which enter the anterior and posterior roots of nerves upon the spinal cord, having their central end in the ganglia, are of the "gelatinous" form or non-medullated. Those derived from the cerebro-spinal system are of the "dark bordered" or tubular form. Thus each system has its distinct fibers which are so blended that both are distributed together.

This system of nerves supplies the blood vessels, and presides over organic life; some portions of the body *receive no*

other supply of nervous power. The muscular coats of the intestinal canal from the stomach downward, with the ducts from the glands which open into it, that which forms the walls of the bladder, of the uterus, ureters, the fallopian tubes and muscular coat which governs the size of blood vessels, *receive no nerves except from the sympathetic.* Independent cells are imbedded in the walls of the heart, uterus and intestinal tract, forming centers of power independent of and free from cerebro-spinal influence.

The ganglia of the sympathetic system are not endowed with a high degree of sensibility, in fact some writers deny that they are possessed of sensibility at all, yet severe suffering arises from disease or irritation of them. Irritation is transmitted through their cerebro-spinal trunks, and hence the brain manifests its inhibitory influence. Irritation in an organ may thus be reflected upon the brain, another organ, or generally diffused through the body.

Irritation of an organ, as the liver, is transmitted through the sympathetic trunks, which also include the cerebro-spinal, to the vaso-motor centers; from thence may radiate influences that paralyze the vaso-motor nerves of other organs. The vaso-motor system has centers wherever there are ganglia, but the chief centers are in the cord and brain. Schiff, Salskowsky, Ludwig and Thiry, locate the vaso-motor center for the whole body in the medulla oblongata. Tscheschichin located it at the junction of the pons varolii and medulla. Brown-Sequard extends it up to the cerebellum and cerebrum. Kronecker locates it in the floor of the fourth ventricle. This seems most reasonable, for here in close proximity, are the motor and special sensory centers, which lie in the medulla oblongata, pons varolii, and base of the brain. The intimate relation between the centers of the ganglia of special sense and the vaso-motor centers

as thus described would explain the sudden reflex action of blushing, or the opposite, extreme paleness, or violent and sudden changes manifest in reflex actions. Dr. Jewell, *Chicago Journal of Nervous and Mental Disease*, in an article upon the Pathology of the vaso-motor nervous system sets forth these facts very clearly.

To recapitulate, in formulas, what we have considered, we find that we have encountered with man, as it were, three principles, powers, or *forces:*

1. *The vital force.* Natural force as exhibited in all Nature's operations by which all organizations are perfected whether animate or inanimate.

2. *Instinct.* The same force manifested in a higher degree. The general action of organic nature; the phenomena having their origin in organic action; the phenomena by which nature manifests her wants, and the impulses that cause her creatures to seek the preservation and reproduction of their species, coordinating muscular action to this end.

3. *Mind: Intellect.* A power superadded to instinct and belonging only to rational, responsible creatures; that which characterizes individuality and enables man alone to become conscious of his personality; that which enables him alone to comprehend his instinctive tendencies, to know God's laws, and confers upon him ability to perform the duties enjoined therein.

All of these may exist in one individual or one or more may be wanting. Thus man may exist in the simple vegetative state, as a parasite, nourished by the maternal circulation with complete absence of the cerebral system; the ganglionic, or nerves administering to vegetative life alone being developed to any considerable extent; he may live only as an animal, controlled wholly by instinct, devoid of reason, as in idiocy and in some forms of insanity; he obeys his instinctive impulses, and is be-

neath the brute when these forces are perverted; or man may represent all that nature has conferred upon her most perfect creatures: vegetative, instinctive, and intellectual, or moral life. Before his fall, in the full enjoyment of all of his faculties, these existed in harmony; man enjoyed full and entire liberty in his thoughts and actions—*free will.* His mental and moral life being dependent upon the integrity of his organization, his animal life, he enjoys freedom of will only in proportion as his organization is perfected, and every part operates in harmony. By this we do not mean to say man is in no way, and under no conditions responsible, since the fall. He can obey vicious impulses, yield to his instinctive feelings, excite by mental effort vicious sensations, and through them when excited, be reacted upon by sensual impulses.

He can repress, when they arise, voluptuous sensations, instinctive impulses, appetites, passions, and if he conquers they retire and in many instances leave him master of the field. His will gains strength at each success—the appetite or passion is correspondingly weakened. Instinctive impulses, appetites or desires, unheeded, in time rust out, or die from inactivity.

Leaving out the question of vital force, of which *we* believe instinct is but a modification, we have man ruled by two antagonistic forces, *instinct* and *reason.* We say *antagonistic,* not because they never unite to accomplish the same end, but because they less often act in concert, or else one becomes the servant of the other.

Two sets of nerves we have called your attention to, as ministering to each of these powers, the cerebral and ganglionic. Intellectual force depends upon the due development and nutrition of the cerebrum. Instinct is dependent upon the same conditions of ganglionic structure; while man can live deprived of intellect, he cannot if deprived of instinctive force. This

being accepted, is it strange that organic life, instinct, instinctive appetites subdue intellect and dethrone the *will*?

Man enters upon life with only instinctive life to control him —instinct directs all his actions. As he develops into manhood those forces have supremacy that are most cultivated and developed. What in early life is but an instinctive appetite, if cultivated becomes a powerful passion. Passion thus developed reacts upon the organism, and mind and will power succumb. Passion may also react upon the brain so changing its vegetative life, that what at first was but an impulse communicated by an organ becomes a power to control imagination, reason, and the will. There is organic lesion which renders a return to a normal moral state impossible. Is it necessary to enter into details to show how man's stomach or generative functions subdue to themselves every other force of his nature?

Comprehending the distribution of ganglionic nerves as we do, is it difficult to understand why an irritation in the intestinal tract, uterus, or other part supplied only by this system of nerves, may give rise to ill-defined sensations, general lassitude, depression, melancholy, hypochondriasis? When a normal instinctive impulse, as an appetite, communicated to the brain is recognized, whether arising from the general state of the system, as hunger, thirst; or from local sensation as the sexual passion; instinct co-ordinates organic action, and muscular action in the line of the impulse. This may be fully proved with the lower animals, as the frog, which are governed wholly by instinct. Consciousness, that function superadded to instinct, enables man to determine the source of all natural, instinctive impulses, although their existence is not dependent upon intellectual development. His organs of special sense, reason and judgment, affirm the existence of instinct to consciousness. Without stopping to discuss the question *whether consciousness is a true wil-*

ness, we affirm that consciousness attests all mental operations; whether conceptions be true or false, *it will not determine the grounds of belief.* But an irritation arising in an organ, it likewise may be reflected upon the cerebral centers, and give rise to ideas. It will not appear in consciousness, except there be pain or pleasure; then the source is not made known. It is not an instinctive impulse, is not the result of impressions upon the organs of special sense. The ideational centers receive it as they would impulses of an unnatural or foreign source, as when the electric current excites a ganglia of special sense. The source of the pain or uneasiness is made known only when it becomes so well defined, so localized, as to become subject to the organs of special sense, through their exercise reaching the intellect. But when the irritation is *unfelt* yet equally positive in effects upon the ideational centers, it is otherwise.

The appetites are the true instinctive manifestations, and appealing to the will for gratification give rise to *desires. Perversion* of these sensations gives rise to the various *instinctive manias.* This is an explanation of our assertion, that Dipsomania is but a physical condition, an exaggerated or perverted instinctive impulse.

We cannot pause to consider the relation of the organs of special sense to the ideational centers, the physiology of the sensorium, sensori-motor function, the manner in which illusions and hallucinations may arise, belief in the reality of which constitutes delusions. It is sufficient to say impressions made upon the sensorium may give rise to sounds, voices, visions, tastes, or smells; these carried to the ideational centers may when reaching consciousness appear in material forms, or in other words will be associated with material objects which the imagination furnishes. When these impressions reaching the sensorium, or ideational centers are from without, that is, made by an external

object, of which there is a false conception of the impression made, as for instance, one seeing a post imagines it to be a man, we say there is an illusion. The appearance upon a moving railroad train that everything is running backwards is an illusion. When a man perceives an object that has no existence except in his imagination, as in delirium tremens when the patient sees the floor covered with rats, serpents, &c., this being the result of irritation in his organs, we say there is an *hallucination*. When the mind is able to correct these false impressions and recognize its own states, we say it is sane. Belief in the reality of these false impressions constitutes what we term *delusion*. When the mind is unable to recognize its error, believes in the reality of the illusion or hallucination, there is insanity. The mind having been subjected to this condition, so that there is well manifested delusion, it is as fully under its influence as when belief is the result of normal action. When the mind of the patient is so affected that he is unable to reason against his delusion, or being reasoned with by others is incapable of accepting the evidence of others against the evidence of his own senses, there is unquestionable insanity. The true lesion of intellect in these cases consists in the want of ability to reason against the delusion, or the evidence of the senses. In other words reason is not influenced by any impression made upon the senses unless in the line of the delusion, *i. e.* not contrary to it. Let us illustrate this by a few cases in which delusion was the result of real impressions, but false conceptions, giving rise to false ideas.

Dagonet relates the case of a patient who could not be convinced that a serpent had not taken up its residence in his belly. A post mortem examination revealed the fact that two ulcers existed in the stomach, one of which had perforated it and caused the patient's death. The case of a woman is reported

who believed that a regiment of soldiers was concealed in her abdomen. A post mortem examination revealed the fact that chronic inflammation had glued the intestines together, although unsuspected before death. Another case in which the same idea existed there was found a fibrous uterine growth. As we have remarked, impressions transmitted to the ideational centers give rise to ideas. It is not even necessary that the irritation, or impression made upon an organ be felt, to cause ideas to arise. Patients in health believe the evidence of their senses, but if their senses deceive them, or internal impressions are made, which come to the brain with all the force and authority of those of special sense, and ideas arise, there will be undoubtedly delusion.

Any appetite, or instinctive function, may be perverted. Thus man may lust after his fellow man, he may thirst for blood, he may desire human flesh. Organic changes determine these instinctive insanities. A good case illustrating this is that of the boy *Bijou*, who was in a menagerie at Paris. He drank on one occasion, in 24 hours, thirty livres of blood, stole pieces of putrified anatomical specimens and devoured them; devoured also a dead lion.

A glutton named Tarare, born in 1772, weighed at seventeen 100 lbs., could eat in 24 hours his weight of beef. He devoured living cats and dogs; he ate at one meal a dinner prepared for twelve men. After entering the hospital at Soultz, in Alsace, he ate the cataplasms, plasters, blood from the leeches, and even was caught at the amphitheater eating of the dead bodies. A child of fourteen months disappeared under very suspicious circumstances. He died in 1798, at Versailles, in a state of complete marasmus, under the influence of a purulent, chronic diarrhœa. A post mortem examination showed the intestines glued together, suppuration, an enormous putrid liver, and a stomach which occupied a large portion of the abdomen.

Cases might be cited illustrating the influence of thirst upon the system and its mastery of intellect. Organic changes induce these perverted instinctive manifestations, as in diabetes, chronic diarrhœa, &c., as well as in those of a purely instinctive character not associated apparently with disease, as dipsomania, &c.

The books are full of cases we might cite to illustrate our views but you can apply them at your leisure.

Disease of the brain may give rise to all the manifestations we have mentioned due to organic changes at remote parts.

Will these irritations, either in the brain or in organs remote, give rise to one idea or will the delirium be general? We have already seen that the idea correlating the impression may not be complex, but a simple idea, limited to a single fact, which, however, controls the mind in respect to all that pertains to the reality of this fact. Every mental faculty is enlisted in support of it. It is then a monomania.

But the fact that every mental faculty is enlisted in the support of the idea, or train of ideas, is used by those opposed to the theory of a monomania to prove the whole mind is insane. This will be correct if we believe the mind never thinks upon one subject independent of all others, and we also ignore the physiology of ideation. The fact that generally the delirium is more universal does not prove that an impression may not result in a single idea. The cause remaining, the conditions being unchanged, *the idea is fixed.* Where a multitude of varying impressions reach the cortical substance there will be corresponding variableness of delusions resulting therefrom; but whether the *impression* is local, *i. e.* in the brain, or remote, or what its nature, we may not always be able to determine from the phenomena consequent upon its action.

Instinctive appetite may not affect the intellect; it may sub-

due it. As we remarked concerning dipsomania, the imagination, when the impulse to drink is given by the organs, may supply pleasant visions of that which in imagination will appease the desire. We can scarcely conceive of an appetite or desire that is not personified in the imagination. The intellect then becomes servant to the instinctive impulse and instead of thwarting begins to devise means of gratifying the desire, when this results there is, the instinct being exaggerated or perverted in its operation, instinctive mania.

We have these two facts then established beyond dispute:

1st. That an impression made in the brain by local irritation, in the sensorium, or in remote ganglia, or parts supplied by the sympathetic, when such impressions reach the cortical substance, may each originate an idea or single train of ideas which will control the mind in the line of such ideas; the mind being unable to correct these false ideas, delusion exists—the individual is a monomaniac.

2d. That any instinct may be exaggerated, perverted or abated. That the Intellect and Will may be controlled by and yield obedience to it, yet preserving unimpaired reasoning power even as to this instinct; approving or condemning as the same faculty may be exercised upon all other questions; the individual being powerless in the grasp of his instinctive impulses.

Thus in gluttony, and in disease, the instinctive desire, hunger, may cause excessive quantities of food to be taken; the same instinct, perverted, may cause the most loathsome and disgusting substances to be devoured; if abated no food will be taken, as in fever, melancholia, &c. Refusal to take food may also be in the line of the delusion, as where the patient conceives the idea that he is too wicked to live and desires to starve himself to death. The same cause that abates the instinct gives rise to the idea. The idea rules in intellectual monoma-

nia, the instinct in instinctive insanity. The idea may be born of the instinctive condition. The perversion may be only that of instinct, hence there may or may not be delusion, the fact depending wholly upon another fact, whether the intellectual centers are involved; whether an impression sufficient to create a delusion has been made.

In all cases instinct co-ordinates muscular action in the line of any instinct. All special senses that may be necessary to serve any special instinct, as sight, smell and taste, are equally under the control of instinct.

Man is so constituted that the greater portion of his life is simply to follow the dictates of his instincts. The more he develops his intellect the more instinct is dethroned.

Has the animal intellect? From what we have said of the relation of instinct to intellect you may infer that we believe it has not. This is not correct. All animals possessed of a cerebrum have a certain degree or kind of intellect. As we have declared, however, it is so closely related to instinct we are unable to separate them. An animal performs many acts that indicate a reasoning faculty that are purely instinctive—man does the same. There is one fact that convinces me beyond all others that animals possess a low degree of intellect: removal of the cerebrum produces the same effect that it does with man. It reduces the animal to the condition of a man in a profound sleep. There may be sensori-motor actions excited, yet if we subsequently awaken the man he is not conscious of the act that was excited. The brain of the animal seems to be but the servant of its instincts, and if possessed of a higher endowment than this its action is so co-ordinated by instinct that we can recognize no trace of mind but by phenomena that are *apparently* mental, we cannot prove them to be such.

Can man be reduced to this level? Can intellect be so in

abeyance to instinct that we recognize only instinctive action? When delusion exists is it a test of insanity? Must delusion exist to constitute insanity? To what extent is it a test of insanity?

DELUSION IS THE LEGAL TEST OF INSANITY.

"Knowledge of right and wrong" has been the test, as held by Hale, and still held in some States of our Union. *It is a test of responsibility but not of insanity.* A man who has not knowledge of right and wrong is irresponsible, but three-fourths of all who are insane are able to distinguish right from wrong.

Wharton* lays down the principle as follows:

"1. Any species of insane delusion exempts from punishment the perpetrator of an act committed under its influence.

"2. The belief, unfounded in fact, that a party is in immediate danger of his life from another, may be such a delusion.

"Or the belief that taking the life of another is the appropriate remedy for a minor though imagined evil, may be also an insane delusion.

"3. Therefore homicide, under such a delusion, is not liable to punishment." This echoes the English cases of like nature.

Wharton, (in W. & S. 52 Sect.) says: "The delusion however, must go to the root of the crime; or, in other words, the crime must have been the result of the delusion."

In vol. vii, 1863 Abbot's N. Y. Digest, it is said: "The true test of insanity is *mental delusion.* If a person persistently believes supposed facts which have no real existence except in his fevered imagination and against all evidence and probability, and conducts himself, however logically upon the assumption of

*Held in recent English decisions.

their existence, he is, so far as they are concerned, under a *morbid delusion; and delusion in that sense is insanity.*"

Greanleaf, Ev. i, p. 464, says: "What constitutes insanity of mind is a question which has been very much discussed, especially of late years; and the opinions of learned judges seem at first view to be conflicting; but much of the apparent discrepancy may be reconciled by adverting to the nature of the cases respectively in judgment. The degree of unsoundness or imbecility of mind, sufficient to invalidate the acts of the party in some cases may not suffice in others. But in regard to insanity, where there is no frenzy or raving madness, *the legal and true character of the disease is delusion*; or as physicians express it, illusions or hallucinations; and the insane delusion consists in a belief of facts, which no rational person would believe."

This applies to monomania as well as general mania. In monomania the idea is fixed, in general mania the delusion is variable.

It is, by the above, but another term for insanity to use the word delusion; but as we believe there may be insanity of action as well as of thought we do not think it proper to limit insanity simply to mental phenomena. We believe there may be insanity of muscular action, as in chorea, subsultus tendinum, &c; there may be insanity of any part of man's nature.

Bucknill defines insanity: "Insanity therefore may be defined as, a condition of the mind in which a false action of conception or judgment, a defective power of the will, or an uncontrollable violence of the emotions and instincts, have separately or conjointly been produced by disease."

The test of delusion was first laid down by Lord Erskine, in his defense of Hadfield for shooting at King George III, in Drury Lane Theater, in the year 1800.

Previous to that Lord Hale's doctrine, "Knowledge of right

and wrong" had prevailed. This was held in the celebrated McNaughton case, partial delusion, (*i. e.* partial insanity) was held to be no defense.

In the Blackburn case,* 23 O. S. R., the Supreme Court held: the defendent must be able to distinguish right from wrong—*must be a free moral agent.* Here two distinct tests are submitted; yet where both are given it would seem that either would exculpate. *Knowledge* of right and wrong is one thing, but the *ability* to do right is another, dependent upon *power*, not knowledge, hence the man who from lesion of the Will has not ability, bears the same relation to the law as he who has not knowledge. This is the test of *responsibility* and cannot justly be considered the test of all forms of insanity.

Delusion has been considered a test—yet it is not a true test further than as we consider the intellect. An error may arise in sensation, giving rise to a delusion, yet it is only in the relation such sensation may sustain to reason and judgment that we can consider it as bearing any relation to insanity.

The condition termed formication may induce me to believe something moves over the surface of my body, my senses enable me to correct this impression. The man with delirium tremens suffers similar sensations—sees hideous objects, reason and judgment are insufficient to correct the error. The sensation then gives rise to delusion. Delusion may arise as well from an unrecognized as from a recognized irritation. If it works the same change in the intellectual centers the result will be the same.

Actions are the offspring of belief. As we believe so we act. The delusion of the insane is to him a reality. In the abstract he may reason well—even against his delusion if brought before him in an abstract form, yet when the delusion becomes a

*See Blackburn Case at end of my report on General Paralysis.

motive for action he no longer reasons against it. His abstract reasoning—the intellectual act—seems to bear no relation to the act springing from his sensibilities. We may not be able to connect any given act with delusion so as to show it to be unquestionably the offspring of delusion. The reasoning power of a maniac is oftentimes so perverted that what seems to flow, to him, as a logical consequence, to another bears no relation whatever to the alleged motive. He views it from his standpoint and the process of reasoning by which he reaches a conclusion cannot be determined—in fact many times conclusions arise without premises—without reason—the delusion is deeply rooted in the mind—is a motive to action and the party is wholly unable to explain it. Hence where one insane commits an act that seems to indicate responsibility we should be extremely cautious, and err, if we err, upon the side of mercy.

Bucknill says: "The existence of delusion is the proof of insanity; and an acknowledged lunatic cannot justly be held to be wholly responsible for his actions, whether we are able to trace the motives for them to delusive opinion or not."

In true homicidal insanity no sufficient motive can be assigned for the act committed. A sudden, irresistible impulse seizes and overpowers the Will. The intellect if employed is but a servant to the instinctive thirst for blood. It is a terrible power converting intelligent man into the ferocious beast—exaggerating the element of destructiveness until at times he would slay all within his reach.

This emotional state may be induced by irritation of organs remote from the brain, or by disease of the brain itself. It will most generally be found to be the result of physical derangement not located in the brain. Many cases reported seem to be the result of menstrual irregularity, or follow parturition, or are determined by some local eccentric irritation that induces a

condition of the sensorium more closely allied to that observed in many cases of *petit mal* than anything else.*

Instinct plays an important part in all these cases. Intellect and Will are in abeyance. All acts are sensori-motor. There is a sudden impulse, but the revulsion of feeling when the impulse is obeyed is as sudden. The act may be a conscious one or not. If the mind recognizes the act it is unable to comprehend fully its nature. There is a condition with many like that which induces suicide. I would need to waste no words to convince you that there is a condition that irresistibly compels a man to destroy his own life. What difference is there when instead of being turned upon himself he is forced to kill another?

Hundreds of cases may be cited to prove that men not to any great extent intellectually deranged take their own lives. Sensibility reigns—the Will is dethroned. I acknowledge that the mind may be deranged and yet be *apparently* sound, yet no one who has a thorough understanding of the relation of the emotions to the intellect and to the Will will doubt this assertion.

I am fully convinced that there is a homicidal mania—that there is an instinctive mania—that the lesion of mind is the enthrallment of the Will—that where the intellect suffers it is only through this powerless state of the Will.

It is a question much discussed whether these conditions—instinctive and homocidal manias—can exist without lesion of the intellect.

If I thrust a pin into a man he immediately strikes me and considers the act only after it has been performed. He then may regret it. The Intellect and Will are not involved—it is a sensori-motor act. Cannot local irritation in an organ determine a similar act, and if sufficiently strong induce it even in

*I omit here several pages in consequence of the great length of these papers.

the face of full consciousness? Can these conditions of sensori-motor function exist without lesion of the intellect? Must there be lesion of the intellect in homicidal mania?

It can; the will alone yielding to the emotional impulse.

Is there a *reasoning* or *moral* mania?

We think these questions have been fully determined.* The appetites, passions, desires are but determined forms of instinctive action—instinctive impulses arising from different states of the ganglionic system of nerves. As we have before remarked *reason alone* does not afford a motive to action. Instinctive impulses do; reason may comprehend the situation; man may feel the disgrace his condition causes, his interests may appeal to him, his friends may appeal to him, his senses may appeal to him, his moral sense, knowledge of right and wrong may enter a protest, yet all this but lessens his self-esteem, he feels his degradation more and plunges headlong into the gulf beneath his feet that he may drown conscience. He is the slave of his instincts. * * * *

We omit eight pages of our consideration of moral insanity. These patients manifest strange perversion of the affections, sensibilities, and often unusual brilliancy of intellect when directed in certain courses: thus they may be great musical performers, but not original composers; they are active in every thing, superficial in everything, continue long in nothing. They are impulsive, conceited, proud. They love change and are constant in nothing except that they are constantly inconstant. They lie with a readiness that is startling, exaggerate everything they relate; the slightest emotion animates and exalts them. They are easily angered, pass readily from one extreme to another; approve to-day what they condemn to-morrow; noth-

*See *Traite de la Manie*, *Paris*, 1869 by Dr. Campagne, &c., &c.

ing influences them so much as flattery. Their word of honor is of no value; they fail to keep the most sacred promises, and excuse all their actions on the ground that "it is of so little consequence," feeling no sense of responsibility whatever in all they do or say. They steal a book or other article if it takes their fancy, soon tire of it and require some other object. Often they are brutal, unfeeling—inflict pain on others without remorse. Their reason teaches them they must respect the rights of others to avoid punishment; their observance of law whether human or Divine is based on no other principle than self-interest. *Duty* is a term unknown. Naturally jealous they envy every one happiness or prosperity and seem happy only when causing unhappiness. Although they boast, they are cowards; bold in speech, cowards in action. They are always planning but never execute; their fickle natures, their love of change render steady occupation impossible. They are lawyers, physicians, chemists, musicians, painters, all in a breath, "everything by spells, but nothing long." They smatter at all, learn thoroughly nothing. In a word they are devoid of a moral nature, possess only imperfect reasoning faculties, are unsound mentally and morally, yet are perfectly able to distinguish right from wrong, and cannot be considered intellectual maniacs.

We regret that we are unable to consider fully the condition; its relation to intellect and to instinct. We conclude our paper, with these omissions, as follows:

1. That there is, in the sense we use the term a monomania.

2. That there is an instinctive, and a reasoning or moral mania.

3. That there is an insanity without delusions.

4. That delusion is a *test of insanity* to this extent: where delusion, as we have defined it, exists, there is insanity, this is accepted by all authority; that no responsibility attaches when

an act is the offspring of delusion, and is in the line of such delusion.

5. That an individual whose delusions defy the evidence of his own senses; whose reason and judgment are incapable of correcting false perceptions or ideas resulting therefrom; whose impulses, having overpowered the will, are purely instinctive, although in all these cases there may be knowledge of right and wrong, is insane and to this extent irresponsible.

6. That knowledge of right and wrong is with this class of cases no test of responsibility.

To these conclusions we append the following views and opinions showing they accord with accepted authority.

"In *monomania* proper, and in *melancholy* we have a partial ideational insanity, with fixed delusion or delusions upon one subject or a few subjects, apart from which the patient reasons tolerably correctly. Psychologically speaking, the existence of delusion indicates fundamental disorder of mental action—*radical insanity;* secondly the delusion reacts injuriously upon other mental phenomena, interfering with correct ratiocination, or due co-ordination of functions, and predisposing to convulsive mental phenomena; and thirdly, while it cannot be subordinated to reflection, the individual may at any moment be subordinated to it, and act under its instigation."

Edmonds, *Select Cases*, Vol. i, 35, defines a *sane* man to be one:

1. Whose senses bear truthful evidence.

2. Whose understanding is capable of receiving that evidence.

3. Whose reason can draw proper conclusions from the truthful evidence thus received.

4. Whose will can guide the thought thus obtained.

5. Whose moral sense can tell the right and wrong growing out of that thought.

6. And whose act can, at his own pleasure, be in conformity with the action of all these qualities—all these unite to constitute sanity; the absence of any one of them makes insanity.

In the case of Kline, city of New York, 1845, Judge Edmonds charged the Jury that, "it must be borne in mind that the moral as well as the intellectual faculties may be so disordered by disease as to deprive the mind of its controlling power." Also, "if some controlling disease was in truth the acting power within him which he could not resist, or if he had not a sufficient use of his reason to control the passions which prompted the act complained of, he is not responsible; but we must be sure not to be misled by a mere impulse of passion, an idle, frantic humor, or unaccountable mode of action, but inquire whether it is an absolute dispossession of the free and natural agency of the human mind.

In the Hadfield case, Lord Erskine submitted the following propositions to which the Court assented:

1. That it is the reason of a man, which makes him accountable for his acts, and, that without the use of his reason he cannot be held guilty of crime.

2. That it is unnecessary that reason should be entirely subverted.

3. That a total loss of memory and reason is not required to constitute insanity.

4. Where hallucinations exist, the deed for which the accused is arraigned must be the immediate offspring either of the hallucination or of the disease of which the hallucination is a symptom."

We will close with the opinion given by Chief Justice Shaw, of Mass., in the Rogers case, (tried for murder of his keeper in prison).

"The conduct may be in many respects regular, the mind

acute, and the conduct apparently governed by rules of propriety, and at the same time, there may be *insane delusion*, by which the mind is perverted. The most common of these cases is *monomania*, when the mind broods over one idea and cannot be reasoned out of it. This may operate as the excuse for a criminal act in one or two modes; either the delusion is such that the person under its influence has a real and firm belief of some fact, not true in itself, but which if it were true, would excuse his act; as where the belief is, that the party killed had an immediate design upon his life, and under that belief, the insane man killed him in supposed self-defence.

Or secondly, where some violent outburst occurs, which taken in connection with former acts indicates that the will was overborne. The questions for them to decide were whether such a delusion existed in the mind of the accused; whether he did not act under an insane but firm belief that the diseased was going to shut him up with some dangerous design, or not for a slight punishment; whether the facts indicate that the deed was done at a moment when the delusion was uncontrollable."

REPORT

OF THE

Committee on Obituaries,

BY THE CHAIRMAN,

THOS. W. GORDON, M. D.,

GEORGETOWN, OHIO.

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GEORGETOWN, OHIO.

GEORGETOWN, OHIO, June 13th, 1874.

To the Ohio State Medical Society:

GENTLEMEN:—As Chairman of the Obituary Committee, I beg leave to present the following statement and partial report:

At the meeting of the Ohio State Medical Society held in the city of Portsmouth, in June, 1872, I was appointed Chairman of said committee. During the year following I did not receive notice of the death of any member, nor did I know that the same committee had been continued, until quite recently, when I received the printed transactions of meeting held in 1873.

Since then, through the courtesy of Dr. S. S. Gray, the Treasurer of the Society, I have learned from letters sent to him, and forwarded by him to me, that Dr. H. D. Ballard, died on the 19th day of July, 1872, and that Dr. Emil Arnold died sometime in the year 1873, the exact date not having been given. Dr. George Mendenhall, for many years a member of this society died at his residence in Cincinnati, on the 4th inst., a printed obituary notice of which is hereto appended:

"At 10 o'clock last night Dr. George Mendenhall died at his residence, on the south-west corner of Race and Eighth streets, after having lingered for nearly a year, prostrated by the incurable affects of a stroke of paralysis.

For many years Dr. Mendenhall has held a leading position as a man and practitioner, and his death will be sorely felt by an extensive circle of friends and his profession. To both he was connected by those qualities that distinguish the best purposes of life. Of his career we give the following incidents:

He was born at Sharon, Beaver County, Penn., May 5, 1814, his parents being Aaron and Lydia Mendenhall, and of them he was the fourth son. His descent runs down from the early Quaker settlers of Pennsylvania, one of his paternal ancestors having taken a prominent part with Wm. Penn, in the 'Elm-Tree Treaty' with the Indians. His mother was a sister of the Hon. Joseph Richardson, Speaker of the House of Representatives of Ohio from 1818 to 1822.

During his early childhood his parents removed to the vicinity of Fairfield, Columbiana County, O., where he spent the greater part of his minority and received such education as the schools of the neighborhood offered, in addition to which his father, who was a man of learning and cultivation, with a good library, imparted to him much valuable instruction. While employed in a country store during the years of his youth, he devoted spare time to reading books on chemistry and pharmacy, suggested by his duties in dealing out drugs and medicines to the customers of the store.

After this he entered the office of the late Dr. Benjamin Stanton, of Salem, Ohio, as a student. His next step was to enter the University of Pennsylvania, where he received instruction under Drs. Chapman, Jackson, Ditson, Kormer, Hare, and Dewees, and graduated with credit in March, 1835, being then about twenty-one years of age.

In May of that year he went to Cleveland, and readily obtained practice. In 1837 he received the appointment of Resident Physician to the Philadelphia Hospital, and remained until the ensuing spring, when he was attacked by a malignant form of petechial typhus, then prevailing in the Hospital.

In October, 1838, Dr. Mendenhall was united in marriage to Miss Elizabeth S. Maule, of Philadelphia, formerly of Richmond, Va. He returned to Cleveland and resumed the practice of medicine with renewed energy, gradually increasing his business and establishing himself in public favor until January, 1843, when he was attacked by a pulmonary disease that threatened permanent loss of health, and compelled him to seek a more genial climate than the region of the lakes afforded.

It was in October 1843, that he came to Cincinnati with his health impaired, but, by a strong energy and the help of his devoted wife, his circumstances which were discouraging, were soon brightened with the hopes of ultimate success.

Soon after his arrival in this city he associated himself with Drs. Vattier, Chamberlain, Warder and Williams in the conduct of the City Dispensary, a charitable medical institution supported entirely by private benevolence, and with no compensation to its attending physicians. In company with some of the last named gentlemen and others, Dr. Mendenhall organized a summer school of medicine, which was carried on with much success for several years.

He performed great labor during the Cholera period of 1849 and 1852, and in the last named year engaged with several prominent medical men of the city in organizing the Miami Medical College, an enterprise that was attended with marked success, as its results attest.

Dr. Mendenhall was a man of splendid abilities, the finest impulses, and of earnest devotion and kindness to his patients.

Outside of his profession he held a place of the highest esteem and confidence.

His deathbed was surrounded by members of his family, to whom he was most devotedly attached. He leaves a widow, two sons—Cyrus Mendenhall, and another eighteen years of age—and a daughter, Mrs. Larz Anderson."

DR. JOHN G. F. HOLSTON, also for many years an active member of the Ohio State Medical Society, died recently at Washington City.

Dr. Holston was an eccentric man, a laborious student, a well informed practitioner of medicine, and an efficient surgeon in the Union army in the war of the Rebellion, and since then a member of the faculty of the Medical College at Washington, D. C.

Had I received a notice of the deaths of Drs. Ballard and Arnold at an earlier date, I should have inquired by letters and thus endeavored to obtain a synopsis of their history, that a more full report might have been made.

And if the time of meeting of the State Medical Society, had not have been so near, when the death of Dr. Holston occurred, I should have taken the abovenamed mode of learning a fuller history of Dr. H., his age, place and time of study, &c., and should the Society wish a more extended report and the present committee be continued, it shall in the future be forthcoming.

Your committee would be enabled to make a more complete report if some member of the Society would constitute himself a committee to notify the Chairman of the Obituary Committee of the decease of any member of the State Society in his immediate vicinity. And if the Chairman of said committee, would then notify the Treasurer of each death reported to him, the labor of the Treasurer would be diminished, and he would not be

annoyed by receiving unkindly replies to his request for dues, nor would he be estimating dues upon his books which cannot be, and are not wished to be collected.

All of which is most respectfully submitted.

THOS. W. GORDON, M. D.,
Chairman O. S. M. S. O. Com.

THOMAS G. CLEVELAND,
Of Cleveland, Ohio.

Dr. Cleveland was born in Madison county, New York, in the year 1825. In 1835 he came to Cleveland with his parents, where he received his preliminary education, studied medicine, and took his degree from University Medical College, N. Y. City, in the spring of 1848. He came home and at once commenced the practice of his profession.

On the breaking out of the war, in 1861, he offered his services and went out with one of the three months regiments, as surgeon. At expiration of that time, he enlisted in the 41st, Col. Hazen, and continued in the service until the close of the war. During this service he contracted chronic diarrhœa from which his general health suffered much, and there is no doubt his service and disease laid the foundation for the complaint of which he died.

When he returned from the army he at once commenced practice again. Soon after this he was appointed physician to the St. Andrew's Society, which position he held until his death. At the time of his death he was an active member of the Board of Health. The Board and the St. Andrew's Society passed very complimentary resolutions to his honor, after his death. The subjoined will show the feeling of the Medical Profession of Cleveland:

"A well attended meeting of physicians was held last evening

in the office of Dr. H. K. Cushing to take action concerning the death of Dr. Thomas G. Cleveland.

Dr. H. J. Herrick was chosen to preside and Dr. I. N. Hines was elected secretary. The object of the meeting was stated in a few remarks by the president.

Dr. H. K. Cushing said that he had known Dr. Cleveland intimately for many years. Their fathers settled in Cleveland about the same time and they attended school together. The speaker learned to love the deceased for he found in him many of the elements of true manhood. He was honest to himself while magnanimous to others to a degree rarely met with. His high personal attainments were the result of his own energy and diligent application. Although not favored with a college education, he applied himself so assiduously to the study of his profession that he became the peer of any in the city. He was always exceedingly kind and was considerate of the feelings of others. If unwittingly he wounded any, he was willing to make a frank, manly apology. He was a man of the strictest honor in every sense of the word and was above any act of meanness. The speaker regarded the death of Dr. Cleveland as a great personal bereavement. He spoke briefly of the nature of the disease that caused his death. He believed its origin dated back to the time when Dr. Cleveland returned from the army, where he had contracted severe malarial disease. Since that time his health had never been really good, although he was generally able to pursue his vocation. Four weeks ago he asked the speaker to examine into his condition, remarking that he was "used up." Dr. Cushing discovered what he believed to be an enlargement of the heart and which, in all probability, would ere long result fatally. He shrank from communicating this to his friend and advised him to stop work for a while and rest. He did stop, because he was not able to continue. He was confined

to his bed for two weeks previous to his death and during that time suffered much from difficulty of breathing. He retained his senses to the last, his mind being clear within a few minutes of the end. An autopsy, held a few hours after death, verified the speaker's opinion as to the disease, the heart being nearly twice its natural size.

Dr. Maynard made a few remarks, desiring to bear testimony to the personal worth of the deceased. He said it was rare that one was found so thoroughly trustworthy in professional as well as all other matters. Dr. Cleveland never spoke unkindly of another and his regard for his professional brethren was a marked feature of his character.

On motion, Doctors Scott, Weber and Maynard were appointed a committee to draft resolutions expressive of the sentiment of the meeting.

The following were named as pall bearers: Doctors Burton, Cushing, Maynard, Scott, Herrick, Preston, Dalbey, Dutton and Miller.

Pending the report of the committee on resolutions a few others gave expression of their estimation of the deceased.

Dr. Dutcher spoke of him as a true friend, one whose virtues they should all emulate.

Dr. Dutton said that when he (the speaker) began his practice a short time ago, he applied to Dr. Cleveland for permission to call upon him for consultation and advice when needed. He replied, "I shall be most happy to assist you at any time and do not let it make any difference with you what may be the worldly circumstances of the patient. I will go just as gladly and willingly to the bedside of the poor as the rich."

Dr. Dalbey spoke of his high regard for the deceased. He had never known a physician more devoted to his profession or more conscientious in doing everything to the best of his ability.

Dr. Powell alluded to a visit, since Dr. Cleveland's death, to the family of an old colored woman, whose physician the deceased had been for many years. When informed of his death she manifested the deepest sorrow and exclaimed: "He was the kindest man I ever knew." The speaker thought no higher eulogy could be pronounced than this simple remark.

The committee submitted the following preamble and resolutions, which were adopted:

WHEREAS, Dr. T. G. Cleveland has been removed from the active ranks of our profession by death, we, the members of the profession of the city of Cleveland, as a last tribute of respect and honor do hereby resolve,

First, that we recognize in him a worthy and successful member of our profession, in which he has been a co-laborer with us for the last twenty-five years, during which time he has merited and secured in a marked degree the respect and confidence of his patrons. He has been a faithful guardian of individual and public health and rendered efficient services to his country in the hour of its darkest peril.

Second, that the profession in his death has lost a most worthy member and his associates an endeared personal friend, who by his honorable character, cordial sympathies, respect for the feelings and rights of others, his faithfulness and zeal in all professional duties and in his zealous watchfulness over professional honor and purity has left an example worthy of imitation.

Third, that in further testimony of our respect, we tender our heartfelt sympathy to his bereaved family, assuring them that we will ever cherish in our hearts pleasant memories of his life and labors.

Fourth, that we attend his funeral in a body and that a copy of these resolutions be presented to his family and published in the city papers.

MEDICAL DEPARTMENT OF WOOSTER UNIVERSITY.

At a meeting of the class of the medical department of Wooster University held Wednesday, the following report of a committee appointed to embody in befitting resolutions its sentiments relative to the decease of the late Professor Thomas G. Cleveland were unanimously adopted:

Whereas it has pleased Amighty God in His wise providence to remove from our midst our former instructor, Professor Cleveland; therefore

Resolved, That while we bow in humble submission to the will of a just Providence, yet we cannot forbear the expression of our grief that such an untimely termination should have been given to his life of eminent usefulness. That we remember with feelings of appreciation and gratitude his connection with us as a teacher, a friend and a guide, and that in his death we are called to mourn the departure of a life that should be emulated by all but can be reached by but few.

Resolved, That we tender to the family of the deceased our heartfelt sympathy.

Resolved, That a copy of these resolutions be sent to the family and also that they be sent to the city papers for publication."

The Doctor was well up in recent therapeutics, for the physiological treatment of diseases. He was among the foremost in detecting and using new remedies, discriminating the useful and true. His pharmacy was always elegant, so that the remedies were always given in an eligible and efficient form. As a prescriber and therapeutist he was the peer of any man in the profession.

The Doctor lived the friend of humanity, and was esteemed and beloved by his patrons and acquaintances. He died December 3d, 1873, of a peculiar heart disease. The organ was

nearly twice the size of the normal dimensions, being seven and one-half inches in length, and five and one-half in diameter. All the parts were increased in size. All the valves were enlarged so that there was not a sufficiency of valvular power. There evidently was hypertrophy of structure without much thinning, notwithstanding the increase in size. He never had a close examination made until shortly before his death. He however had suffered for a long time with a peculiar irritable condition of the heart from which the hypertrophy resulted. The peculiar respiration, under which he labored to the last, I have only met twice before. In the paroxysms of dyspnœa, which occurred frequently, the inspirations gradually increased in frequency and fullness until the utmost capacity of the lungs had been attained and then gradually subsided to a normal frequency or towards the very last to a total cessation of respiration. For a time, on several occasions, these stoppages were 40 and 45 seconds. Then again the respirations started off normally as to frequency again, and after a time, the paroxysm would again occur, making a curious condition of this function. I have never seen anything of this sort in heart disease with valvular lesion. There were no sequilla, anasarca &c., which usually attend heart disease.

DR. L. T. PEASE,

Williamsburg, Clermont Co., Ohio.

Deceased in May last with disease of the heart. Dr. Pease was a member of the Ohio State Medical Society, (the time of his membership can be seen on record). Dr. Pease practiced medicine for 40 years. His age at death was 66 years. He was distinguished as a safe and sound practitioner. His char-

acter as a Christian was unsullied. He always labored to maintain the dignity of the profession.

DR. J. PUTMAN,

Gahn, Knox County, Ohio.

Died November, 1873. The Committee are unable to obtain any further information relative to the decease of this member.

LIST OF

DECEASED MEMBERS,

OF THE

OHIO STATE MEDICAL SOCIETY.

With Date of Admission and Date of Death.

NAME	POST OFFICE ADDRESS.	ADMITTED.	DIED.
Ackley, H. A.	Cleveland	1850	
Allen, Peter	Kinsman	1850	
Amos, C. E.	Cleveland	1852	
Andrews, F. M.	Dayton	1862	*Army*
Angel, E.	Akron	1852	
Arnold, Emil	Ironton	1873	
Baker, A. H.	Cincinnati	1846	1865
Baker, Timothy H.	Wooster	1851	1871
Ballard, H. D.	Findlay		1873
Blackman G. C.	Cincinnati	1860	1871
Boyle, C. E.	Columbus	1851	1870
Boalse, A. N.	Lockburn	1848	
Boerstler, G. W.	Lancaster	1846	1871
Brown, B. S.	Bellefontaine	1855	1874
Brown, E. T.	Logan	1849	
Bronson, James	Newton Falls	1852	
Brennan, Thomas	Dayton	1855	1858
Bridge, W. W.	Marion	1859	1864
Baggs, James	Ontario	1866	1868
Buckner, Philip J.	Cincinnati	1850	
Buckner, Wm.	Hamilton	1853	
Butterfield, John	Columbus	1846	1847
Carey, Abel	Salem	1852	1872
Carroll, Thomas	Cincinnati	1854	1871
Caldwell, Joseph	Huron	1857	1866
Chamberlain, E. K.	Cincinnati	1847	1847
Cook, Charles C.	Youngstown	1862	1863
Cook, F.	Atwater	1853	1857
Cox, D. A.	New Paris	1846	

NAME.	POST OFFICE ADDRESS.	ADMITTED.	DIED.
Crook, James M	Dayton	1853	
Crume, P. M	Eaton	1847	1869
Dawson, John	Columbus	1851	1866
Danna, M		1849	
Dean, W. F	Milan	1857	*Army*
Delemater, John	Cleveland	1850	1867
Dodge, I. S	Cincinnati	1854	1872
Dolman, Wm	Cleveland	1852	
Ells G. E	Lithopolis	1849	1867
Foote, H. E	Cincinnati	1854	1871
Fries, George	Cincinnati	1862	1866
Fyffe, E. P	Urbana	1851	1867
Gabriel, R. W	Dublin	1854	1860
Gailey, J. D	Marion	1851	
Gans, S	Cincinnati	1861	1864
Gard, B. F	Columbus	1847	1849
Gaston, E	Morristown	1849	1868
Gille, L. C. C	Westville	1853	
Green, M	Cambridge	1855	1856
Griswold, Wayne	Circleville	1866	
Haggott, J. P	Eaton	1861	1862
Haines, Job	Dayton	1853	1860
Haines, V	Cambridge	1853	1865
Hall, W. C	Fayetteville	1859	1871
Helmick, G. W	Harrisburg	1848	
Henderson, W	Delaware	1848	1866
Hopkins, Rudd C	Newburg	1852	*Army*
Hornbeck, L	New Carlisle	1849	1865
Howard, R. L	Columbus	1846	
Hughes, J. W	Berlin Center	1858	1869
Hurxthall, F. T	Massillon	1849	
Johnson, William	Delaware	1850	
Judkins, J. P	Cincinnati	1846	1867
Judkins, William	Cincinnati	1847	1861
Kable, W. R	Bellebrook	1846	1859
Kennedy, J. L	Batavia	1864	1866
Kreider, M. Z	Lancaster	1846	1852
Kyle, J. G	Xenia	1856	1870
Lathrop, H	Columbus	1846	1849
Lawson, L. M	Cincinnati	1853	1864
Marshall, N. T	Cincinnati	1854	
Martin, Joshua	Xenia	1853	1857
Matson, A. F	Logansville	1857	1867
McCracken, W. A	Springfield	1867	
McGuire W. B	Waynesville	1848	
McMeans, R. R	Sandusky	1854	1862
McNeal, F. D	Canal Dover	1854	
Mendenhall, G	Cincinnati	1854	1874
Merriman, A	Madison	1853	1867

NAME.	POST OFFICE ADDRESS.	ADMITTED.	DIED.
Mitchell, G. F.	Mansfield	1850	1869
Mitchell, M.	Mansfield	1863	1864
Millikin, Samuel	Hamilton	1853	
Moore, Jonas	Marietta	1852	1856
Morehead, W.	Zanesville	1855	1861
Mount, William	Cumminsville	1853	1866
Mussey, R. D.	Cincinnati	1847	1866
Norton, J. C.	Marion	1848	
Oliver, J. Q.	Cincinnati	1854	
Pease, L. T.	Williamsburg	1863	1874
Potter, J. F.	Cincinnati	1854	1868
Purple, J. G.	Brooklyn	1853	
Putnam, J.	Gahn	1873	1873
Reid, J. T.	Fairfield	1863	1864
Risinger, J. F.	Galion	1849	1866
Rigdon, L.	Hamilton	1853	1865
Rives, L. C.	Cincinnati	1850	1870
Rodman, Thomas S.	Cleveland	1852	
Robertson, James	Perrysburg	1853	1854
Sachse, G. J	Columbus	1846	1860
Sanders, Moses	Norwalk	1853	
Shotwell, John T.	Cincinnati	1850	1850
Shædford R. J.	Midway	1853	1868
Silver, D. H.	Columbus	1851	1864
Skinner, J. S.	Columbus	1849	
Sharpe, E. C.	Williamsburg	1859	1868
Smith, Edmund		1850	1850
Smith A. C.	Medina	1852	1861
Smith, J. A.	Piqua	1853	1858
Spillman, Henry	Medina	1855	1862
Stanton, Benjamin	Salem	1852	1861
Story, R.	Cleveland	1852	1866
Taggart, T M.	Dalton	1857	1867
Taliaferro, Wm. T.	Cincinnati	1854	1871
Tappan, Benjamin	Steubenville	1852	
Thompson, M.	Mount Vernon	1850	1867
Thompson, Robert	Columbus	1846	1865
Thompson, J. W.	Columbus	1860	1862
Thomas, K. G.	Alliance	1858	1869
Tilden, D. J.	Toledo	1850	
Tilden, Daniel	Sandusky	1856	1870
Tullis, J. W.	Troy	1851	
Van Pearse, James	Columbus	1850	
Van Tuyl, D. R.	South Bend	1850	
Van Tuyl H.	Dayton	1853	
Wallace, R.	Lewisburg	1861	1865
White, John		1848	
Wigton, A. E.	Delaware	1861	1862
Weatherby, A. S.	Cardington	1865	1870

LIST OF

MEMBERS

OF THE

OHIO STATE MEDICAL SOCIETY,

With P. O. Address and Date of Admission.

NAME	P. O. ADDRESS.	ADMITTED.
Adams, D. P.	Columbus	1873
Adams, John M.	Lebanon	1874
Adams, John W.	Lebanon	
Adams, John M.	Ridgeville	1874
Agard, Aurelius H.	Sandusky	1853
Aiken P. J.	Newark	1869
Alcorn, A. W.	Ravenna	1870
Allen, Dudley	Oberlin	1870
Allen, D. B.	West Liberty	1865
Ameck, M.	Cincinnati	1874
Anderson, W. S.	Newtonville	1867
Andrus, A.	Westerville	1872
Applegate, Fred. C.	Windham	1859
Armstrong, T. H.	Powhatan Point	1862
Bailey, J. S.	Freeport	1873
Ball, A.	Zanesville	1848
Baker, Norman	Lucas	1858
Ballinger, Wm. J.	Pleasant Valley	1864
Bartholow, Roberts	Cincinnati	1869
Bartlett E. P.	Genoa	1874
Beach, C. H.	Wellington	1868
Beach, T. D.	Alton	1874
Beach, J. N.	West Jefferson	1859
Beach, A. J.	Belleville	1863
Belding, Alvin	Ravenna	1853
Bell, E. R.	Ripley	1871
Bell, A. E.	Zanesville	1855
Beagrand, Pierce	Fremont	1853
Besse, H.	Delaware	1868

NAME.	P. O. ADDRESS.	ADMITTED.
Berlin, C.	Wapakoneta	1868
Bennett, P. C.	Garrettsville	1870
Bennet, John	Cleveland	1869
Beardsley, C. E.	Ottawa	1869
Bertolett, W. J.	Shreve	1869
Bertolett, J. B.	Letonia	1870
Bertolett, H. A.	Washingtonville	1870
Berger, S. H.	Toledo	1874
Beverly, P. F.	Jerome	1862
Bishop, J. C.	Middleport	1873
Bishop, L. W.	Maineville	1871
Bishop, S. P.	Delta	1870
Bigney, P. N.	Cincinnati	1871
Bigelow, J. M.	Lancaster	1846
Bigelow, Asa	Toledo	1874
Bing, J. P.	Portsmouth	1851
Blizzard, S. R.	Huntsville	1860
Blymer, A.	Delaware	1868
Black, J. R.	Newark	1867
Blesch, P. E.	Columbus	1869
Bonner, Stephen	Cincinnati	1847
Bond, J. W.	Toledo	1874
Boyd, G. M.	Xenia	1857
Bowers, E. D.	Columbus	1861
Boerstler, G. W., Jr.	Lancaster	1870
Brockett, A. J.	Bristolville	1874
Brown, J. E.	McConnellsville	1873
Brown, A. M.	Cincinnati	1851
Brown, J. C.	Urbana	1863
Brown, J. A.	DeGraff	1860
Brook, G. W.	Ellsworth	1858
Brooks, J. H.	Brownsville	1854
Bruce A. G.	Clarksfield	1870
Bramble, D. D.	Cincinnati	1870
Bryson, C. C.		1871
Brainard, A. C.	Orangeville	1870
Brainard, H. C.	Cleveland	1870
Bryant, W. G.	Springfield	1871
Bracken, W. C.	Jersey	1869
Brayton A.	Cary	1859
Brellen, Joseph	Grove City	1856
Bricker, W. R.	Shelby	1848
Brinkerhoof, D. H.	Fremont	1853
Buchner, J. H.	Cincinnati	1874
Buckner, J. H.	Cincinnati	1863
Buckingham, E. M.	Springfield	1855
Buckingham, E. V. B.	Centerton	1874
Burr, J. N.	Mount Vernon	1858

NAME.	P. O. ADDRESS.	ADMITTED.
Bunce Wm	Oberlin	1864
Butler, G. W	Alton	1869
Butler, George O	Cleveland	1870
Campbell, John	Uniontown	1855
Campbell, W. H	Vanceburg, Ky	1871
Caruthers, John A	Killbourne	1859
Caldwell, W. W	Hamilton	1874
Cadwallader Rowland	Findlay	1862
Carter, J. O	Marion	1866
Carmichael, W. A	Loveland	1871
Cassat, M	Cincinnati	1870
Carson, Wm	Cincinnati	1871
Carson, W. B	McComb	1874
Carrick, A. L	Cincinnati	1871
Chase, B. S	Akron	1870
Chase James L	Toledo	1874
Chamberlain, D. P	Toledo	1874
Cherry, Wm	Toledo	1874
Chisholm, J. W	Mt. Perry	1873
Clark, Henry P	Ashland	1862
Clark, John H	Dayton	1869
Clason, Thomas S	Bellefontaine	1865
Cotton, J. D	Marietta	1852
Cotton, D. B	Portsmouth	1872
Cottle, L. A	Maineville	1871
Coleman, David	West Union	1872
Coble, D. W	Westerville	1872
Courtwright, A. P	Cincinnati	1871
Courtwright, G. S	Lithopolis	1867
Conklin, W. J	Dayton	1868
Conklin, H. S	Sidney	1849
Conner, P. S	Cincinnati	1853
Conner, P. S	Cincinnati	1868
Constant, W. S	Delaware	1866
Coons, Israel A	Middletown	1853
Corson, John	Middletown	1866
Comegys, C. G	Cincinnati	1871
Combs, J. S	Owensville	1865
Corwell, H. G	Youngstown	1874
Corey, John M	Fremont	1874
Coldham, James	Toledo	1874
Crafts, John M	Sylvania	1874
Craig, B. W	Mansfield	1874
Culver, J. F	Belpre	1874
Cuykendall, M. C	Bucyrus	1874
Cutler, E. J	Cleveland	1870
Cutler, James	Bell Point	1864
Cushing, H. K	Cleveland	1857

NAME.	P. O. ADDRESS.	ADMITTED.
Culbertson, Howard	Zanesville	1855
Dawson, W. W	Cincinnati	1853
Davis, John	Dayton	1853
Davis, John	Cincinnati	1854
Davis Wm. B	Cincinnati	1865
Davis, T. D	Dayton	1872
Dandridge, A. S	Cincinnati	1854
Dandridge, N. P	Cincinnati	1871
Darwin, Henry W	Gettysburg	1859
Dalby, Isaac N	Cleveland	1870
Day, E. A		1871
Dew, J. S	Trimble	1873
Dennig, R. M	Columbus	1851
Dean, Geo. A	McComb	1874
Duncan, James A	Toledo	1874
Denman, M. N	West Unity	1874
Donahoe, H. J	Sandusky	1854
Doherty, G. A	Cincinnati	1868
Douglass, W. W	Toledo	1874
Drake, I. L	Lebanon	1859
Drury, Wm. H	Columbus	1859
Dunlap, Alexander	Springfield	1854
Dunlap, A. S	Dayton	1868
Dunlap, C. W	Springfield	1869
Dunham, J. M	Columbus	1873
Ebright, L. S	Wadsworth	1870
Eckman, Hiram	Tuscarawas	1869
Edwards, J. D	Xenia	1867
Edwards, Tom O., Jr	Lancaster	1873
Ellis, A. N	Lockland	1868
Ellsberry, W. W	Georgetown	1874
Erwin, R. W	Bay City, Mich	1872
Estep, William	Lloydsville	1852
Everhard N. S	Wadsworth	1870
Farrell, T. J	Columbus	1873
Falconer, Cyrus	Hamilton	1854
Firmin, F. W	Findlay	1874
Fenneberg, Gustavus	Toledo	1874
Fisher, P. Q	Nashport	1873
Firestone, J. L	Salem	1870
Firestone, L	Wooster	1852
Finch, S. F	Green Springs	1857
Finch, C. M	Portsmouth	1869
Forbes, S. F	Toledo	1856
Follett, Alfred	Granville	1864
Foster Nathaniel	Cincinnati	1854
Fowler, S. W	Delaware	1873
Frizzell, W. A	Freestone	1872

NAME.	P. O. ADDRESS.	ADMITTED.
Frankenberg, O.	Columbus	1873
Fuller, A. B.	Loudonville	1868
Fuller, S. W.	Bellefontaine	1853
Gardner, G. W.	Harrisburg	1873
Gay, N.	Columbus	1848
Gabriel, J. F.	Piqua	1856
Galpin, Loman	Milan	1857
Gawne, A. J.	Cleveland	1870
Galer, Frank M.	De Graff	1874
Gerwe, F. A. J.	Cincinnati	1854
Gillett, Bartley	Springfield	1849
Gilchrist, R. S.	De Graff	1856
Gilliam D. L.	Nelsonville	1873
Gibson, Richard McD.	Tiffin	1871
Gordon, T. W.	Georgetown	1849
Goble, P.	Worthington	1849
Gotwald, A. G.	Dayton	1854
Gonsaulis, C.	Sparta	1863
Goldrick, William	Delaware	1868
Gould, D. T.	Cleveland	1870
Goodlove, Wm	Monterey	1874
Goodson, J. W.	Bellevue	1874
Green, J. H.	Troy	1871
Gray, S. S.	Piqua	1867
Graife, William	Sandusky City	1874
Gundry, Richard	Athens	1856
Guerin, Z. F.	Columbus	1856
Guyttard, F.	New Bedford	1870
Guthrie, James W.	Wooster	1870
Harley, L. G.	Dalton	1853
Hamilton, J. W.	Columbus	1849
Hart, B. F.	Marietta	1854
Harmon, Julian	Warren	1857
Hall, W. E.	Fayetteville	1859
Hall, N.	Cumminsville	1871
Hall, J. M.	Fayetteville	1871
Hall, C. B.	Millersport	1872
Hall, Camillus	Burlington	1872
Hadley, Edwin	Richmond	1865
Hazzard, J. S. R.	Springfield	1867
Harrison Eugene, B.	Napoleon	1869
Halderman D.	Columbus	1869
Hadlock J. W.	Cincinnati	1871
Hayne, J. H.	Nashville	1874
Hartman, S. Duff,	Tippecanoe City	1874
Hathaway, Calvin	Edgerton	1874
Hathaway, Harrison	Weaver's Corners	1874
Helmick, S. C,	Baltimore	1873

NAME.	P. O. ADDRESS.	ADMITTED.
Helmick J	Harrisburg	1849
Henderson, J. P.	Newville	1850
Henderson, D. W	Marysville	1856
Henderson R. A	Upper Sandusky	1865
Hendrickson, Hugh	Lewis Center	1868
Herrick, H. J	Cleveland	1865
Herrick, L. C	Woodstock	1871
Heuston, R. C	Oxford	1868
Heighway, A. E	Cincinnati	1870
Hill, G. W	Ashland	1873
Hill, E. L	Oxford	1857
Hill, N. S	Neville	1866
Hill, H	West Alexandria	1867
Hildreth, C. C	Zanesville	1853
Hitchcock, James	Port Clinton	1857
Higgins, C. W	Big Plain	1869
Hiner, S. B	Lima	1874
Hines, Isaac N	Cleveland	1874
Holston, J. G. F., Jr	Zanesville	1873
Hoover, T. C	Bellaire City	1873
Howard, E. W	Akron	1852
Holston, J. G. F	Zanesville	1850
Hopkins, D. O	St. Paris	1866
Hough, J. B	Ridgeville	1869
Houghton, J. W	Wellington	1870
Hobson, J. F	Newburg	1870
Hoff, J. W	Pomeroy	1872
Holdt, George	Cincinnati	1871
Hoege, Geo. L	Fostoria	1874
Hohly, Frederick	Toledo	1874
Huestis, Isaac	Chester Hill	1869
Hughes, E. E	Thurman	1873
Hubbard, J. C	Ashtabula	1856
Hunt, A. H	Blackleyville	1868
Hurd, A	Findlay	1870
Huggins, R. D	West Alexandria	1871
Hyatt, E. H	Delaware	1862
Hyde, William	Wauseon	1871
Isham, A. B	Walnut Hills, Cin.	1872
Jacoby, F	Columbus	1873
Jacobs, W. C	Akron	1866
Jenner, A. E	Crestline	1866
Jennings, E	Dayton	1867
Jennings, J. D	Sonora	1869
Jewett, W. H	Hilliard	1869
Jewett, M	Middlebury	1870
Jewett, H. S	Dayton	1871
Jones, T. W	Columbus	1847

NAME.	P. O. ADDRESS.	ADMITTED.
Jones, R. E.	Gomer	1863
Jones, A. B.	Portsmouth	1868
Jones, W. H.	Cleveland	1868
Jones, L. M.	West Liberty	1869
Jones, W. W.	Toledo	1849
Jones, J. D.	Newburg	1870
Jones, N. M.	Cleveland	1870
Jones, Philo E.	Wauseon	1874
Jobes, J. A.	German, Darke Co.	1870
Joseph, A. P.	Fairmont.	1862
Junkens, M. W.	Bellaire	1859
Kay, Isaac	Springfield	1853
Keever, M. H.	Ridgeville	1850
Kennedy, J. C.	Batavia.	1854
Keyt, A. T.	Walnut Hills, Cin.	1850
Kelley, H. R.	Galion	1868
Kemp, J. D.	Dayton	1868
Kearney, T. W.	Cincinnati	1870
Kendig, E. V.	Haynesville	1874
Kincaid, W. P.	New Richmond.	1854
Kinnaman, J. W.	Ashland	1870
Kirby, Jacob	Hillsboro	1871
Kitchen, B. F.	Clay Post Office	1872
Kitchen, H. W.	Cleveland	1874
Kirkley, Cyrus A.	Toledo	1874
Knowlton, A. P.	Olmstead Falls	1870
Laisy, Jacob	Cleveland	1874
Lawless, J. T.	Toledo	1874
Landon, C. P.	Westerville	1851
Lamme, W. H.	Xenia	1853
Lane, E. S.	Sandusky	1853
Larimore, F. C.	Mt. Vernon.	1871
Lang, E. R.	Portsmouth	1871
Leonard, B. B.	West Liberty	1854
Leonhard, C. S.	Ravenna	1865
Lewis, Edward C.	Canal Dover	1870
Lewis, W. C.	Rushville	1869
Lewis, D.	New Haven	1848
Lee, E. B.	Garrettsville	1870
Little, J. A.	Delaware	1868
Loving, S.	Columbus	1858
Longfellow, A. J.	Fostoria	1861
Longworth, W. N.	Van Wert	1866
Loller, W. B.	Nashville	1864
Lord, J. M.	Chesterville	1868
Logan W. M.	Cincinnati	1871
Lucky, J. B.	Elmore	1874
Luddington, H.	Cincinnati	1871

NAME.	P. O. ADDRESS.	ADMITTED.
Ludlow, J.	Cincinnati	1871
Lyman, C. N.	Wadsworth	1852
Mahlman, H. A.	Columbus	1869
Mahlman, C. H. W.	Columbus	1859
Matchett, W. H.	Greenville	1862
Maynard, A.	Cleveland	1863
Mack, John	Shelby	1853
McBeth, J. C.	Galion	1858
McBride, Alexander	Berea	1865
McCarty, Oliver	Polk P. O.	1862
McCasky, H.	Felicity	1868
McCardy John	Youngstown	1870
McCollom, E. J.	Tiffin	1871
McClure, James	Marietta	1866
McClurg, John	Center Village	1867
McCullough, J. G.	Bealsville	1868
McCullough, A. M. F.	Bealsville	1874
McDermott, C.	Dayton	1857
McDowell, W. J.	Portsmouth	1872
McEbright, Thomas G.	Akron	1866
McElwe, S.	New Castle	1866
McFarland, J. A.	Tiffin	1850
McGraw, Aaron	Burton	1869
McGuire, J.	Norwalk	1870
McKean, Wm.	Mount Hope	1870
McKinley, C. G.	Sunbury	1866
McKenna, L. F.	Junction City	1873
McLaughlin, A. C.	Tremont	1852
McLaughlin, R.	Butler	1869
McNally, Thomas	Chillicothe	1853
McNeely, J. S.	Hamilton	1867
Metz, Abram	Massillon	1852
Metcalf, C. T.	Warren	1870
Mendenhall, J. W.	Marathon	1871
Metzler, A. S.	Buena Vista	1874
Myers, Benj.	Ashland	1874
Minor, T. C.	Cincinnati	1873
Miller, A. C.	Orrville	1858
Miller, Thomas V.	Columbus	1869
Miller, T. C.	Cleveland	1870
Miller, C. A.	Orrville	1871
Miles, A. J.	Cincinnati	1869
Mitchell, George	Mansfield	1868
Moe, L. W.	Ottawa	1860
Monahan, A. B.	Jackson	1872
Moore, W. C.	Wooster	1852
Moore, William	New Lisbon	1865
Moore, Eugene L.	Moscow	1868

NAME	P. O. ADDRESS.	ADMITTED.
Moore, E.	Warren	1868
Moore, A. C.	Amelia	1869
Moore, James	Ironton	1872
Morris, F. B.	Ross	1869
Morris, Jonathan	Ironton	1873
Morse, D. A.	London	8168
Morgan, J. B. F.	Clarksburg	1873
Morgan, E. D. S.	Berlin	1872
Mounts, J. L.	Morrow	1860
Mouser, J. A.	La Rue	1870
Murphy, J. A.	Cincinnati	1872
Muscroft, C. S.	Cincinnati	1854
Mussy, W. H.	Cincinnati	1854
Mullen, T. J.	New Richmond	1855
Murray, L. S.	Medina	1870
Murbach, A. J.	Archibald	1874
Nash, W. H. H.	Quaker Bottoms	1874
Naw, J. H.	Carroll	1873
Neal, T. L.	Dayton	1863
Neil, Alexander	Columbus	1868
Nicholson, W. A.	Cleveland	1853
Noble, C. D.	Oberlin	1870
Noble, David	Hillsboro	1860
Nolan, J. G.	Toledo	1874
Norman, Frank	Columbus	1873
Nourse, J. D.	Reynoldsburg	1873
Orr, G. B.	Cincinnati	1871
Owsley, J. B.	Jacksonburg	1871
Paige, W. F.	Johnstown	1864
Palmer, C. D.	Cincinnati	1871
Patterson, A. V.	Mansfield	1861
Patterson, Wilson S.	New Lexington	1874
Pearce, Enoch, Jr.	Steubenville	1859
Pearce H. C.	Urbana	1867
Pearce, L. E.	Cable	1869
Peck, W. L.	College Hill	1853
Peck, W. V.	New Richmond	1872
Perrin, James	Cleveland	1870
Phillips, H. W.	Kenton	1866
Pixley, S. M.	Portsmouth	1873
Pixley, Sumner,	Cleveland	1870
Pollock, Calvin	Donnelsville	1873
Pomerene, P. P.	Berlin	1870
Pomerine, Joel	Millersburg	1858
Pomeroy, O.	Chardon	1869
Potter, J. B.	Canal Winchester	1847
Pratt, E. B.	Mount Sterling	1869
Price, Joseph	Randolph	1852

NAME.	P. O. ADDRESS.	ADMITTED.
Preston, J. C.	Brunswick	1857
Priest, Jonathan	Toledo	1874
Primrose, J. P	Nelsonville	1872
Pullen, G. W	Logan	1864
Ralston, D. H	Granville	1864
Rathbun, C	Salem	1860
Rankin, A. H	Sandusky	1870
Randall, R	Bath	1870
Raymond, B	Lancaster.	1860
Reamy, T. A	Cincinnati	1855
Reed, N. C	Columbus	1873
Reed, C. H	Toledo	1873
Reed, A. B	Brooklyn Village	1870
Reed, A. N	Norwalk	1870
Reed R. C. S	Glendale	1867
Reed, William	Iberia	1865
Reed, C. R	Middleport	1864
Reed, C. A. Lee	Jones' Station	1874
Reeve, J. C	Dayton	1861
Reid, J. L	Van Wert	1874
Riggs, John U	Bryan	1873
Rice, J. B	Fremont	1868
Ridenour, W. T	Toledo	1870
Rives, Landon	Cincinnati	1853
Robb, Andrew	Blanchester	1859
Robertson, Charles	McConnellsville	1849
Robinson, J. D	Wooster	1856
Robinson, J. N	Medina	1856
Rodgers, J. H	Springfield	1859
Rogers, Robert	Springfield	1847
Rogers, J. G	New Richmond.	1853
Roots, W. Y	Milford Center	1869
Root, H. A	Toledo	1874
Root, E. B	Painsville	1874
Ropp, W. P	Delaware	1869
Rosenfeldt, A	Cincinnati	1871
Russell, J. W	Mt. Vernon.	1848
Russll, I. W	Mt. Vernon	1870
Runyon,	West Unity	1874
Salisbury, J. N	Russellville	1872
Saylor, Will	Gratis	1871
Scarf, W. D	Bellefontaine	1855
Schwab, Louis	Portsmouth.	1872
Scoville, S. S	Lebanon	1859
Schueller, J. B	Columbus	1869
Scott, A. J	Loudenville	1870
Scott, Xenophen C	Cleveland	1874
Scott, W. J	Cleveland	1855

NAME.	P. O. ADDRESS.	ADMITTED.
Schnetzler, H. M.	Toledo	1874
Seaton, A. M.	Medway	1869
Seely, W. W.	Cincinnati	1871
Seeds, R. Z.	Hilliard	1873
Seldon, O. G.	Shanesville	1851
Seldon, Robert	Shanesville	1870
Sensaman, H.	Tremont	1871
Sellers, A.	Lebanon	1867
Severance, R. A.	Bellevue	1874
Shepherd, W. E. W.	Nelsonville	1873
Sheppard, W. A.	New Vienna	1856
Shepherd, W. W.	Hillsboro	1871
Shackelton, E. L.	St. Marys	1871
Sherman, A. M.	Kent	1870
Shoemaker, J. W.	Napoleon	1869
Sharp, W. T.	Middleburg	1853
Shouse, B. A.	Antioch	1868
Shively, J. W.	Massillon	1858
Sinnet, E.	Granville	1850
Silver, D. R.	Sidney	1870
Sidwell, N. H.	Wilmington	1871
Slocum, Charles	Defiance	1874
Smith, S. M.	Columbus	1846
Smith, S. D.	Lockington	1874
Smith, C. T.	Middleport	1873
Smith, J. H.	Delaware	1873
Smith, J. W.	Wellington	1863
Smith, Harry	Mt. Vernon	1869
Smith, D. B.	Cleveland	1870
Snodgrass, J. M.	Ostrander	1871
Snyder, D. J.	Scio	1850
Southard, J. M.	Marysville	1860
Sparrow, T. R.	Columbus	1873
Spencer, B. T.	Newark	1873
Spees, S. J.	Hillsboro	1863
Sprague, James	London	1866
Speece, N. V.	Quincy	1870
Stein, Geo. T.	Columbus	1873
Stephenson, Y.	Georgetown	1872
Stephenson, J. H.	Leesville	1860
Stevenson, A. G.	Richmond	1856
Stark, W.	Cincinnati	1871
Stevens, E. B.	N. Y.	1853
Stillwell, Thomas	Fremont	1857
Stanley, E.	Sandusky	1870
Stansell, J. A.	Forest	1866
Stockstill, J. W.	New Carlisle	1867
Stewart, J. W.	Dayton	1868

NAME.	P. O. ADDRESS.	ADMITTED.
Stewart, S. H	Columbus	1869
Steeley, H. G	Sidney	1869
Stanton, Byron	Cincinnati	1871
Sweney, R. L	Marion	1859
Sykes, W. H	Plymouth	1870
Tagert, E. Curtis	Hilliard	1871
Taylor, James L	Wheelersburg	1872
Taylor, W. H	Cincinnati	1874
Terry, C. A	Cleveland	1870
Thompson, J. C	South Bloomfield	1848
Thompson, J. B	Columbus	1846
Thompson, W. R.	Vandalia	1871
Thorn, S. S	Toledo	1873
Thorn, E	Yellow Springs	1867
Thurston, R. C	Oxford	1868
Tipton, R. H	Darbyville	1853
Tichenor, E. J	Lebanon	1869
Titus, A	Wheelersburg	1871
Treon, John	Miamisburg	1853
Tumey, S. D	Circleville	1856
Tupper, C. E	Ottawa	1874
Todd, Joseph	Shreve	1868
Underwood, A. H.	London	1869
Underwood, W. J	Akron	1869
Underhill, J. W	Cincinnati	1874
Vail, D. W	New Haven	1874
Vanatta, E	Fultonham	1855
Vandervort, J. W	Harveysburg	1864
Vattier, J. L	Cincinnati	1850
Vaughters, Thos. G	Portsmouth	1872
Voorhees, S. R	Mason	1873
Waddick, J. M	Toledo	1873
Waddle, Thomas	Toledo	1874
Wade, D. E	Cincinnati	1854
Wagenhals, P. M	Lancaster	1869
Waggoner, Joseph	Ravenna	1870
Watt, William	Kenton	1870
Wallace, J. H	Smithville	1870
Warren, Guy	Garrettsville	1870
Warren, J. A	Wheelersburg	1872
Waterman, H. C	Middleport	1868
Weber, G. C. E	Cleveland	1857
Welsh, J. W	Deersville	1873
Welsh, B. F	London	1859
Weed, Frank. J	Cleveland	1870
Weaver, J. M	Wooster	1865
Westbrock, A. E	Ashley	1872
Wheaton, J. M	Columbus	1869

NAME.	P. O. ADDRESS.	ADMITTED.
White, J. H.	Delaware	1866
Whiting, L. M.	Canton	1870
Whittaker, J. T.	Cincinnati	1871
Whitehead, A. M.	Springfield	1873
Wilson, J. L.	Greenfield	1871
Wilson, Sam'l	Wooster	1854
Wilson, Albert	Sidney	1854
Wilson, W. F.	Ironton	1856
Wilson, W. H.	Greenfield	1865
Wilson, C. M.	Miami Springs	1872
Wilson, D. C.	Ironton	1872
Williams, A. S.	Fostoria	1852
Williams, E.	Cincinnati	1856
Williams, T. B.	Delaware	1860
Williams, D. S.	West Independence	1868
Williams, A. D.	Cincinnati	1868
Williams, A. Lee	North Lewisburg	1871
Wilkins, John A.	Delta	1874
Wilbur, A. M.	West Unity	1874
Whitmar, Joel E.	Mount Hope	1874
Wirth, R.	Columbus	1865
Willis, P. A.	Bellepoint	1868
Willis, T. A.	Bellepoint	1868
Wiggins, C. W.	Big Plain	1869
Wood, D. B.	Warren	1852
Wood, John R.	Warren	1871
Woods, J. T.	Toledo	1862
Woodbridge, T.	Youngstown	1870
Woodward, Charles	Cincinnati	1851
Woodward, Warren	Cincinnati	1871
Woodruff, L.	Alton	1867
Woody, Robert	Eaton	1863
Wolfley, W. J.	Columbus	1873
Worthington, A. T. C.	Middletown	1871
Wright, M. B.	Cincinnati	1852
Wylie, A. N.	Ripley	1866
Wylie, J. L.	Ripley	1872

HONORARY MEMBERS.

Professor H. H. Childs, Pittsfield, Massachusetts.
" Charles A. Lee,* New York City.
" William Tully,* New Haven, Connecticut.
" J. Knight, New Haven, Connecticut.
G. B. Guthrie, M. D., New York City.
M. J. Bailey, M. D., New York City.
R. R. McIlvaine, M. D. New York City.
Professor Willard Parker, New York.
J. H. Brower, M. D., Lawrenceburg, Indiana.
M. M. Harding, M. D., Indiana.
George Sutton, M. D., Aurora, Indiana.
J. C. Blackburn, M. D., Covington, Kentucky.
J. L. Hayes, M. D., Philadelphia, Pennsylvania.
Professor R. D. Mussey,* Cincinnati, Ohio.
R. E. Houghton, M. D., Richmond, Indiana.
Robert Thompson,* M. D., Columbus, Ohio.
G. W. Boerstler,* M. D., Lancaster, Ohio.
W. B. Lyons, M. D., Huntington, Indiana.
J. M. Stevenson, M. D., Pennsylvania.
J. M. Kitchen, M. D., Indianapolis, Indiana.
S. P. Hunt, M. D., Sterling, Illinois.
G. S. B. Hempstead, M. D., Portsmoutn, O.
H. K. Steele, M. D., Denver, Colorado.
P. Beeman, M. D., Sidney, O.
Dr. Awl, Columbus.
Jared B. Kirtland, Cleveland.
H. Conant, M. D., Maumee City.

*Deceased.